American Fruit Grower

WESTERN EDITION
FEBRUARY • 1955

LIBERTY HYDE BAILEY
1858-1954
A century of horticultural achievement

Now...only the GREAT

NEW FERGUSON 35

Gives you positive 4-WAY WORK CONTROL

New design power take-off seen as boon to fruitgrowers

Take a *good* look at the first and only tractor ever to out-perform the famous Ferguson "30". It's the new Ferguson "35", and it *does* out-perform any tractor in its field!

It gives you far wider *range* of control, without ever leaving the new "Foam-Float" seat.

It gives you more selective control, to throw weight and power where you need it, to zoom through tough jobs and tight spots, with power to spare.

It gives you more benefits from the Ferguson System, which more closely than ever couples implement and tractor into *one* responsive, flexible unit.

But words are not enough. You must see and *feel* the features which make the Ferguson "35" the most versatile, workingest tractor you ever rode. Call your Ferguson Dealer. Arrange *now* for a demonstration!

WIN
a new Ferguson "35"
FREE
Register with your
Ferguson Dealer

Subject to Federal, State and Local Regulations

go years ahead / *GO* **FERGUSON**

1 QUADRAMATIC CONTROL is a new Ferguson exclusive that lets you raise and lower implements, select draft and maintain a uniform working depth, adjust the hydraulic system's speed of response, hold implements rigidly at desired position—all on the same quadrant, and with finger touch.

2 DUAL-RANGE TRANSMISSION provides wide range of speeds, 6 forward, 2 reverse, to allow you to fit the speed *exactly* to the work, whether transplanting, spraying or doing close cultivation in the 35's "creeper" gear. Or plowing or discing in high-range first. Or driving along the highway at rapid transport speeds up to 14 mph.

3 NEW "2-STAGE" CLUTCHING controls *both* tractor transmission and PTO with a single pedal for operating such machines as the baler or forage harvester continuously, regardless of tractor starts and stops. Halfway down on pedal (you don't have to guess, you can *feel* it) disengages transmission *only* while PTO continues to operate. All the way down stops both transmission and PTO.

4 VARIABLE DRIVE PTO is not ordinary live power take-off. With the PTO shift you select either the drive that's in ratio to the *ground* speed of the tractor, for such jobs as raking, planting or fertilizing—or, the drive that's in ratio to *engine* speed, for harvesting, foraging, baling or other machine work, demanding continuous PTO operation.

DOW

FIRST STEP ON YOUR FRUIT PROTECTION SCHEDULE

DN-289, Dow's peak performance dormant spray, stops insect damage before it starts

Right now is the time to get ready for another year of quantity and quality fruit production. Spraying your trees with *DN*-289®—a liquid non-oil preparation successfully used for dormant spraying since 1942—controls a variety of over-wintering insects such as rosy apple aphid, grain aphid, early summer green aphid, black cherry aphid, mealy plum aphid, eye-spotted bud moth, cherry base bearer, pecan nut case bearer, pear psylla, scale insects, twig borer and red mite eggs. *DN*-289 is not affected by freezing.

DN-289 is recommended for spring dormant use on apples, pears, cherries, plums, currants, pecans—but *not* on peaches. It is completely water-soluble—easy to mix and use. Always consult the label on the container for complete directions and precautions for handling this effective *dinitro* material.

To get a head start on the spraying that will bring bigger profits at harvest—use *DN*-289. THE DOW CHEMICAL COMPANY, Agricultural Chemical Sales Department, Midland, Michigan.

you can depend on DOW AGRICULTURAL CHEMICALS

DOW

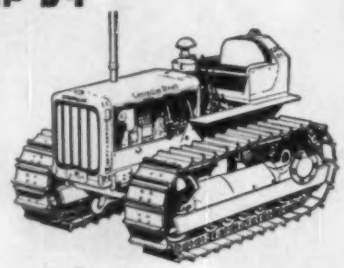
NEW HORSEPOWER WORK CAPACITY *to help you do more for less!*

NOW at your Caterpillar Dealers: two new CAT* Diesel Orchard Tractors bringing you extra production, extra speed to help you get your work done faster!

Here's more *power* than ever before . . . for operating a power takeoff sprayer and saving the expense and nuisance of another engine . . . for pulling wider machines or working deeper to make fewer passes between your trees. More usefulness . . . improve your orchard — push out the dead trees — build irrigation and drainage ditches. Economy — cut your labor and fuel costs 60% or more! Here are the tractors that will do it:

NEW **46 DRAWBAR HP D4**

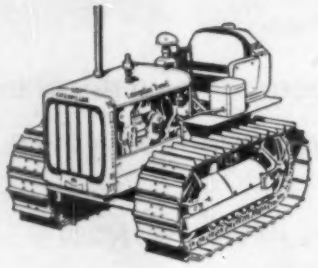
Greater overall performance. Work side hills with greater safety. Compact . . . work closer to trees. NEW: Direct-electric starting system for the diesel engine optional to match your climate or orchard program.



NEW **36 DRAWBAR HP D2**

Accomplish up to 60% more in soil fitting than the ordinary 3-plow wheel-type tractor. Handle every orchard or grove job, plus the many extras you now hire done . . . clearing, leveling, ditching, land improvement.

Save on machinery investment by using integral Cat Tool Bar equipment and companion tools. See the complete line at your dealer's today. Caterpillar Tractor Co., Peoria, Illinois, San Leandro, California, U.S.A.



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. . . send coupon today!

FIRST IN TRACK-TYPE TRACTORS
FIRST IN DIESEL POWER

Caterpillar Tractor Co.
Peoria, Illinois, Dept. AMF25

Send me the following booklets I've checked:

☐ "Saving in Cirtus"
☐ "Owners Report"
☐ "Clearing for Crops"

I have.....acres of orchard.

Name.....Phone No.....
PLEASE PRINT

Address.....

City.....State.....

American Fruit Grower

REG. U.S. PAT. OFF.

The Only National Fruit Publication

Vol. 75 February, 1955 No. 2

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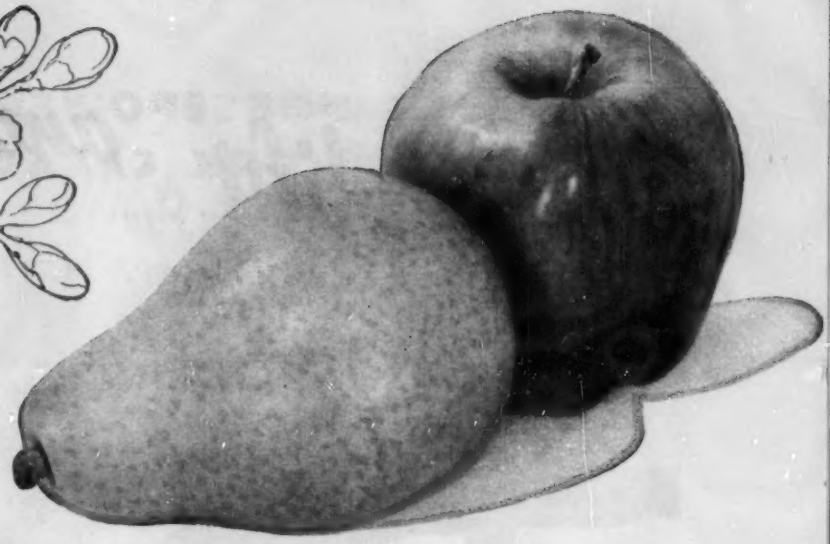


SAVE YOUR CROP... PROTECT YOUR TREES

This spring you can spray away Fire blight

This spring for the first time, apple and pear growers have a powerful and effective control against the destructive fury of fire blight. The balanced combination of antibiotics in Agri-mycin* 100 gives positive control when the spray program is started at 20% to 30% of full bloom.

It is at this time that the fire blight organism (Erwinia Amylovora) is most apt to be spread by wind, rain and insects, and thus start infection in your trees.

Agri-mycin* 100 is absorbed into the blossoms, leaves and young growth, fights the disease from within the plant. It is doubly effective because it contains the wide-range antibiotic, Terramycin*. Terramycin prevents development of streptomycin-resistant strains, and at the same time actually increases the effectiveness of the streptomycin.

Three years of tests with Agri-mycin* 100 involving more than 100 thousand trees in 42 states and Canada have resulted in an effective, easy and low-cost fire blight control program. Agri-mycin* 100 is available from your regular supplier of spray materials. Use it to spray away fire blight this spring.

Agri-mycin* 100

a product of Pfizer Chas. Pfizer & Co., Inc. Brooklyn 6, N. Y.

Terramycin® brand of oxytetracycline
*Trade Mark

- One jar makes up to 400 gallons spray
- Will not cause russeting of fruit
- Aids in preventing blossom drop
- Harmless to bees

One pre-blossom and one post-blossom spray gives effective control for

WALNUT BLIGHT

Proper control measures are now being developed for Agri-mycin control of Bacterial Spot of

PEACHES

Use Black Leaf® 253 COVER SPRAY

Black Leaf 253 is tops for total clean fruit among cover sprays used by many leading growers in major fruit areas. Orchards protected with this modern, multi-purpose cover spray turn out more clean fruit and save you time, labor and money. Use Black Leaf 253, and don't worry about complicated, high-cost cover spray programs.

One-product control of mites and insects is yours with Black Leaf 253. It kills codling moth, red-banded leaf roller, curculio, leafhoppers, European red mite, two-spotted mite, Oriental fruit moth, pear psylla, cherry fruit fly, San Jose scale, Forbes scale and many other pests.

Dustless Black Leaf 253 is easy to add to the tank, where it mixes readily. It is compatible with all fungicides and materials recommended with DDT and Parathion.

Cuts residue problems. Black Leaf 253 provides excellent pest control with minimum chemical residue and essentially no visible residue. Switch to Black Leaf 253 for a streamlined, economical, effective cover spray program all season long.

The "LEAF" that protects the tree is a "Black Leaf" SPRAY

Other Famous Black Leaf Spray Materials

Aramite Wettable
Arsenate of Lead
BHC Wettable
DDT Wettable
Dieldrin Wettable
Black Leaf 40®
Ferbam Wettable
Lindane Wettable
Malathion Wettable
Parathion Wettable
Phygon* Wettable
T.D.E. Wettable
TEPP

*T. M. U. S. Rubber Co.

Many other pest control products also carry the reliable, dependable Black Leaf label: insecticides, fungicides, weedicides and rodenticides. Ask for full information.

BLACK LEAF PRODUCTS DIVISION

Virginia-Carolina Chemical Corporation

401 E. Main St., Richmond 8, Va. • 332 N. Queen St., Lancaster, Pa. • 1214 Bayshore H'way, San Jose, Cal.

FORD announces 2 NEW POWER SERIES

5 new models!

NEW! MOST POWERFUL FORD TRACTOR EVER!

For the first time in Ford Tractor history, you have a *selection* of Ford Tractor power sizes and models. Now, there are *five* new models in *two* power sizes.

Want more power? Then it's the 800 Series Fords; they have full 3-plow power—30% more than any previous Ford Tractor! They have a new 5-speed transmission to give you a wider range of operating speeds. One of these 800's has a new live power take-off. It's operated from the regular clutch pedal. No grabbing for extra levers!

You get new Tailored Traction, too. As always on a Ford, traction increases automatically on heavy pulls. New easy-on, easy-off wheel weights (sold separately) give you still more traction for *extra-heavy* pulls.

There are many more features your Ford Tractor and Implement Dealer will show you. See him for a new slant on what really modern tractor power can be. Tractor and Implement Division, Ford Motor Company, Birmingham, Mich.

Ford Farming

GETS MORE DONE... AT LOWER COST

800 SERIES.
Full 3-Plow Power—
"Watch the Work Fly!"

600 SERIES. Full 2-Plow Power

Available in three models. Two have new 5-speed transmission. One equipped with the new, live PTO. Headlights and tail light are standard—and dozens of other features you expect from Ford.

This
FITCHBURG CHIPPER
converts orchard prunings into valuable
LOW COST MULCH

Leading fruit growers have found it really pays in better fruit and better finish to chip their prunings and thinnings, and leave the chips around the base of the trees as a moisture holding mulch.

One well-known grower says:

"Our Fitchburg Chipper is one of the best investments I have ever made, and has already paid for itself. I believe the chip mulch to be far better than hay as it will not burn and will last a lot longer."

For as little as $650 you can get a suitable Fitchburg Chipper for orchard work with the patented Fitchburg Safety Spring so essential to smooth operation.

FREE FOLDER gives you the facts!

Tells how to use low-cost wood chips on your farm. Gives ways to earn extra money, technical data for the Fitchburg Chipper, model types, specifications. Send for your folder today!

FITCHBURG ENGINEERING CORPORATION
Dept. AF-25, Fitchburg, Massachusetts
Send me the new Fitchburg Chipper Folder. I am interested in Wood Chips for:
Please Check
☐ Fruit tree mulch ☐ Stable bedding
☐ Garden or berry mulch ☐ Poultry litter
☐ Soil enrichment ☐ Farm roads, field lanes
Name
Address
Town State

LETTERS TO THE EDITOR

Tree Nuts

Dear Editor:

I have just read the article, "Growing and Selling Tree Nuts" by J. L. Brewer, which interested me very much. I also grow nuts and have just gathered 300 pounds. I would like to sell them but no one seems to be interested unless they are picked from the shell. I gather, hull, wash, dry, break, and pick, all by hand for my own use, and wish I knew how to break and pick faster since it is too much of a job and hard on my fingers.

We have about 35 large trees planted about 100 years ago. I don't know the variety, but they are good size, good flavor, and so far I have never found a worm in one of them. Several people have wanted to buy the trees for lumber, but the price is so low at $10 apiece that I felt they were worth much more than that for the shade alone, as well as the nuts. However, I have to leave so many of the nuts for the squirrels that I would appreciate any information you may have on processing machinery.

Lowell, Ind. Mrs. Robert M. Black

Dear Editor:

I take AMERICAN FRUIT GROWER and like it very much. I was much interested in J. L. Brewer's article on black walnuts, and would like to know of a concern which makes walnut processing equipment.

Philippi, W. Va. C. B. Smith

Our best suggestion for small nut cracking machinery would be to write Benn Thompson at Harrisonburg, Va. The machinery which Mr. Brewer uses is so large that it occupies a separate building, and is very costly. Hand nut crackers may be bought at large hardware stores, or possibly mail-order houses, but unless Readers Black and Smith have walnuts that are unusually constructed, these will still leave the meats to be picked. With a good cracking method, however, our walnut-growing readers should be able to move their crop on a mail-order basis, with ads in the local newspaper to assist.—Ed.

Varieties—the Spice of Life

Dear Editor:

Some 30 years ago my father, who was a fruit grower in western Colorado, had two splendid apple trees of the Wismer's Dessert variety. These apples were of a greenish yellow color with a red stripe (something of the appearance of a Rambo), and were quite sweet and juicy. They ripened in the early fall.

The trees have long since been removed and we seem to have lost the variety. I have not seen it listed in any nurserymen's offerings, and I wonder if it will be possible to find it anywhere. I would like to get a few trees of this fine apple variety for our family orchard.

Grand Junction, Colo. Edar B. Roe

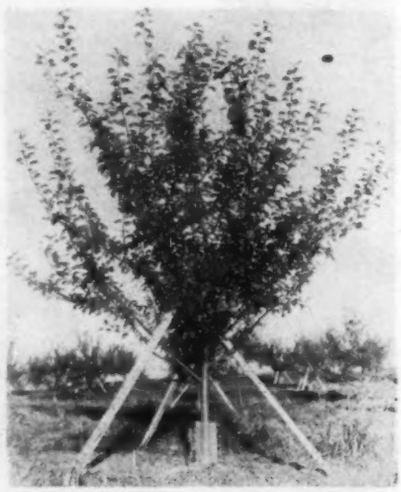
The Wismer apple, also called Wismer's Dessert and Wisner's Dessert, is an apple of Canadian origin introduced in 1897 by J. H. Wismer, Port Elgin, Ontario. The fruit is colored as described by Mr. Roe, the flesh mild subacid, of excellent flavor and exceedingly fine, tender texture. The trees are very hardy, vigorous, and productive.

Undoubtedly Dr. O. C. Roberts, head of the Fruit Gardens Committee of the American Pomological Society, can send you a source of scions for propagation if you will write him at University of Massachusetts, Amherst.—Ed.

Wooden Props for Damaged Trees

Dear Editor:

I read with interest the article on storm-damaged trees in the December issue of AMERICAN FRUIT GROWER. New Hampshire growers found that wooden props made of 1x4 rough lumber or poles cut in the woods were preferable to wire for holding damaged trees in a rigid, upright position. This system was used successfully in the 1938 hurricane.



The upper end of the prop is beveled to fit the trunk and nailed securely to the tree. A piece of old tire or inner tube is placed on the end of the prop to prevent it from damaging the trunk. The lower end is set firmly into the ground. On large trees the prop was placed under a limb, while on young trees the prop was nailed to the trunk at a convenient place. A forked pole was not found as satisfactory as a straight pole with a beveled end.

Durham, N.H. E. J. Rasmussen
Extension Horticulturist

Likes Pruning Articles

Dear Editor:

We thought we would drop AMERICAN FRUIT GROWER as we are taking a number of western publications. Then came the December issue with those two splendid articles by Banta and Roberts on pruning. The state of Washington leads the world in apple production, but not one grower in a hundred knows how to prune an apple tree.

Some of them do fairly well except for ladder openings—then they clean forget that ladders are a necessity in thinning and picking and that cross limbs bar out the ladder. Under irrigation, some of our western apple trees have a limb spread of over 20 feet from the trunk. There is not an apple grower in the West with an arm reach of 20 to 25 feet, and transient workers cannot be blamed for busting—yes, busting—their way into the tree at picking time. Those two articles suited me fine, so here is a check for three years and some to spare.

Tonasket, Wash. J. P. Douglass

It takes THE RIGHT PRODUCT FOR EVERY PEST PROBLEM

For Best Results...Build Your 1955 Spray Schedule Around These Reliable Orchard Brand Products!

For Insect Control

Genitox* S-75 Spray Powder (75% DDT)
Genitox S-50 Spray Powder (50% DDT)
Genicop Spray Powder (DDT—Copper)
Genithion* P-15 Spray Powder (15% Parathion)
Lead Arsenate: Astringent; Standard
25% TDE Emulsifiable Concentrate
50% TDE Spray Powder
25% Malathion Spray Powder
50% Malathion Emulsifiable Concentrate
Dieldrin Emulsifiable Concentrate (1½ lbs. Dieldrin per Gallon)
50% Dieldrin Spray Powder
40% TEPP
40% Nicotine Sulfate
Paradichlorobenzene
50% Methoxychlor Spray Powder
Methoxychlor EM-2 Emulsifiable Concentrate
BHC G-12 Spray Powder
BHC G-10 Spray Powder
Systox

Miticides

Genite* EM-923 Emulsifiable Concentrate
50% Ovex Spray Powder
15% Aramite Spray Powder
Aramite EM-2 Emulsifiable Concentrate

Fungicides

"530" Spraycop* (53% Metallic Copper)
"340" Spraycop* (34% Metallic Copper)
Ferbam Spray Powder
Ziram Spray Powder
Mercury Sprays
Dritomic* Sulfur
Micro-Dritomic* Sulfur

Weed and Brush Control Materials

ORCHARD BRAND SPRAYS & DUSTS

OTHER PRODUCTS

Stafast* Hormone Spray Powder (For Thinning Apples and Reducing Pre-Harvest Drop)
Sta-Set† (Liquid for Reducing Pre-Harvest Drop)
Filmfast* (Spreader-Sticker)
Genifilm "L" (Spreader-Deposit Builder)

*Reg. U.S. Pat. Off. †General Chemical Trade-Mark

GC Allied Chemical

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.
Offices In Principal Agricultural Centers

The Bel Air Sport Coupe

Plenty of beef
under that beautiful hood!

The *motoramic* Chevrolet

Take your choice of three great new engines—the "Turbo-Fire V8" and two new "Blue-Flame" 6's—all three packing plenty of power to match the Motoramic's "let's go" look! Your Chevrolet dealer is the man to see for a demonstration and all the wonderful details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

The valve-in-head V8 as only the valve-in-head leader can build it!

The new "Turbo-Fire V8" (162 h.p., with an 8 to 1 compression ratio!) is available with new standard transmission or the extra-cost options of Powerglide or Overdrive.

Two new "Blue-Flame" 6's!

The new "Blue-Flame 136" (with Powerglide) and the new "Blue-Flame 123," (yours with either Overdrive or standard shift). All three engines are sparked by a new 12-volt electrical system.

MORE THAN A NEW CAR . . . A NEW **CONCEPT** OF LOW-COST MOTORING!

Memo

To: GROWERS

From: AMERICAN CYANAMID COMPANY

Here are the facts on the only insecticide that offers all the following advantages:

...Malathion is the only organic phosphate insecticide which offers you a wide margin of safety in handling as well as superior insect control.

...Malathion kills aphids and mites as well as scores of other sucking and chewing insects on more than 30 crops.

...Malathion is compatible with most other spray materials.

...Malathion residues on crops disappear rapidly.

...Malathion is available in wettable powder, emulsifiable liquid and dust forms.

In just a few short years, malathion insecticides have built an outstanding record of successful use throughout the country. Find out how they can help you achieve easier, more efficient insect control.

Malathion insecticides are available from well-known manufacturers, under their own trade names.

WRITE TODAY FOR MALATHION GROWER'S GUIDE. This free booklet contains valuable general information on malathion, also dosage tables. Consult your county agent or other local agricultural authority for suggestions about application procedures and timing of sprays.

AMERICAN Cyanamid COMPANY
AGRICULTURAL CHEMICALS DIVISION
30 Rockefeller Plaza, New York 20, N. Y.

DEVELOPERS AND PRODUCERS OF
MALATHION AND PARATHION TECHNICAL

P.S. Malathion kills flies, too!

Better Fruit with Less Work

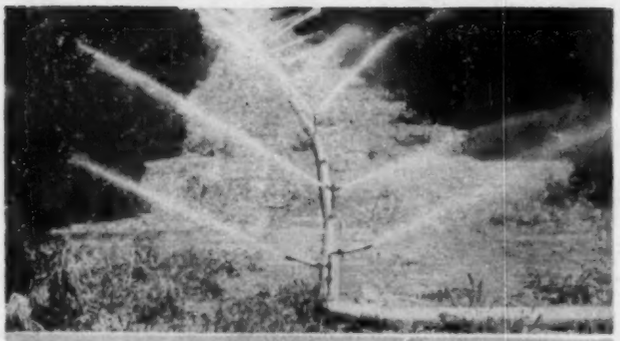
Arcadian®

UREA 45

FERTILIZER

Any way you apply it, ARCADIAN UREA 45, the 45% Urea Nitrogen Fertilizer saves labor and cuts application costs. It speeds the job of supplying nitrogen needed for good growth, heavy bloom and set, and high yields of top-quality fruit.

Spread UREA 45 on the ground fast by machine or by hand. Every easy-lifting 80-pound bag of free-flowing, concentrated ARCADIAN UREA 45 supplies 36 pounds of nitrogen—two or three times as much as ordinary nitrogen materials provide. You have fewer bags to lift and get more trees evenly fertilized per day.



Apply UREA 45 in irrigation water and let water do the work of spreading it. ARCADIAN UREA 45 penetrates everywhere the water goes, then fixes on soil particles ready to feed roots steadily and well. Because UREA 45 penetrates to the roots, it feeds crops equally well when used in furrow, bed and underground pipe irrigation, as well as in flood and sprinkler systems.

Place your order now for this work-saving, versatile new nitrogen. Write us and we'll send you free literature and tell you who sells ARCADIAN UREA 45 in your vicinity.

Arcadian®

PRODUCTS FOR PROFITABLE FARMING

UREA 45 Fertilizer—45% *Nitrogen Pellets*
Nitrogen Solutions—*Pressure and Non-Pressure types*
American Nitrate of Soda—*Improved Granular*
A-N-L® Nitrogen Fertilizer—*Pelleted*
Sulphate of Ammonia—*Dry Crystalline*

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New York 6, N. Y. • Ironton, Ohio • Omaha 7, Neb.
Indianapolis 20, Ind. • Hopewell, Va. • Columbia 1, S. C.
Atlanta 3, Ga. • San Francisco 3, Cal. • Los Angeles 15, Cal.

NITROGEN DIVISION ALLIED CHEMICAL

Let it Rain!

CRAG Fruit Fungicide 341

Trade-Mark

A GLYODIN SOLUTION

Gives You the Best Apple Scab Protection at the Lowest Cost

Thousands of growers over the past six years have proven to themselves that CRAG glyodin solution gives exceptional scab control even through prolonged rainy periods.

In addition to doing the best job on apple scab, you get these bonus benefits too:

- Outstanding Fruit Color and Finish
- Higher yields from healthier trees
- Red Mite Suppression
- Flexibility — When you can't outguess the weather, you can combine the long-lasting protection of CRAG glyodin solution with the after-rain control of liquid phenyl mercury.

You too will get the finest quality fruit at lowest cost per bushel when you use CRAG glyodin solution. So, for greater profits, put CRAG glyodin solution in your spray program. Get it at your dealer now.

CRAG AGRICULTURAL CHEMICALS are produced by

CARBIDE AND CARBON CHEMICALS COMPANY

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.

"Crag" is a registered trade-mark of Union Carbide and Carbon Corporation.

Here are 3 of the 8...the

AIR-AGE 8

3 JOHN BEAN SPEED SPRAYERS®

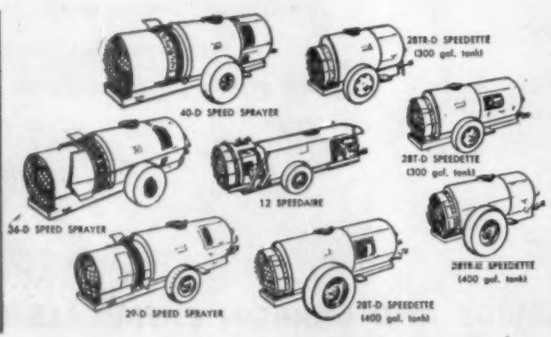
...THE HEAVY-DUTY AIR SPRAYERS for MAXIMUM "ENGINEERED PERFORMANCE"

With the first Speed Sprayer, in 1941, John Bean pioneered the Air Age in orchard spraying. Now, in 1955, Speed Sprayers still lead the field — the most efficient air-type sprayers ever devised to meet the needs of large-scale commercial fruit growing.

A Speed Sprayer gives you maximum protection for your trees when you need it — allows you to complete your spray schedules fast and on time at critical spraying seasons. Speed Sprayer puts the protection *where* you need it . . . with thorough "zoned" coverage from ground to top-center of tallest trees and clear-through penetration of densest foliage. Positive acting controls harness fan and nozzle delivery to meet all orchard and wind conditions and insure economical use of spray materials. And you save labor with a Speed Sprayer's one-man operation.

The wide range of spray power — three models with 40, 36 and 29-inch axial flow fans respectively — lets you select a Speed Sprayer that fits your needs exactly. See it in action in your own orchard or grove — ask your John Bean dealer for a demonstration.

the JOHN BEAN AIR-AGE 8 for '55



. . . EXACTLY THE RIGHT AIR SPRAYER FOR EVERY ORCHARD

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John BEAN DIVISION OF FOOD MACHINERY and CHEMICAL CORP

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CALENDAR OF COMING MEETINGS & EXHIBITS

Feb. 1-2—New Hampshire State Horticultural Society annual meeting, Highway Hotel, Concord.—E. J. Rasmussen, Sec'y, Durham.

Feb. 2-3—Vermont Apple Growers short course, University of Vermont, Burlington.

Feb. 5—Amherst-Nelson Fruit Growers of Virginia annual winter meeting, The Health Center, Lovingston.

Feb. 10—Vermont State Horticultural Society Strawberry Growers meeting, Barre.—C. L. Calahan, Sec'y, Burlington.

Feb. 9-11—Ohio State Horticultural Society annual meeting, Neil House, Columbus.—C. W. Ellenwood, Sec'y, Wooster.

Feb. 10-11—Idaho State Horticultural Society 60th annual meeting, Hotel Boise, Boise.—Anton S. Horn, Sec'y, Boise.

Feb. 10-12—West Virginia State Horticultural Society 62nd annual convention, Martinsburg—Carroll R. Miller, Sec'y, Martinsburg.

Feb. 14-16—National Peach Council annual meeting, in joint session with Pennsylvania State Horticultural Assn., York, Pa.—M. J. Dorsey, Sec'y, NPC, 1502 S. Lincoln, Urbana, Ill.; John U. Ruef, Sec'y, PSHA, State College, Pa.

Feb. 21—North Carolina Mutual Peach Growers Society annual meeting, Carolina Hotel, Pinehurst.—T. T. Hatton, Ext. Hort. Spec., Raleigh.

Mar. 1-2—Vermont State Horticultural Society annual meeting, Fruit Growers' Conference, and Trade Show, Burlington.—C. L. Calahan, Sec'y, Burlington.

Spring meetings of Michigan State Horticultural Society; **Feb. 23**—Waterford Town Hall, Pontiac; **Mar. 4**—South Haven; **Mar. 10**—Hart; **Mar. 16**—Traverse City, all in high school auditoriums of respective cities.—H. D. Hootman, Sec'y, East Lansing.

Apr. 28-29—Shenandoah Apple Blossom Festival, Winchester, Va.

Aug. 16-20—Centennial of Farm Mechanization, Michigan State College, East Lansing.—A. W. Farrall, Head, Agr. Engr. Dept., MSC, East Lansing.

Aug. 29-Sept. 6—International Horticultural Congress 14th annual meeting, Scheveningen, Netherlands.—Dr. G. de Bakker, Sec'y, Bezuidenhout 30, The Hague, Netherlands.

PLANT SOME NECTARINES

HAVE you tried growing nectarines? This delicious fruit is essentially a fuzzless peach, and makes an attractive addition to a roadside stand display.

Nectarine trees are similar to peaches in growth habit, hardiness, and tillage requirements. The smooth-skinned fruits are smaller than peaches, and are usually more susceptible to plum curculio and brown rot.

Two varieties, **Redchief** and **Cavalier,** introduced in 1952 by the Virginia Agricultural Experiment Station, hold great promise. Both are resistant to brown rot and are vigorous and productive.

Redchief, a white-fleshed variety, is mild-flavored and above average in quality. The blossoms are somewhat tender to frost. The fruit ripens about 10 to 12 days before Elberta peach, is average in size, has bright red color, is freestone, and has fairly firm flesh.

Cavalier is a yellow-fleshed nectarine, average in size, with a deep yellow under-color and a mottled red over-color. The firm flesh is of above average quality with an aromatic and slightly bitter flavor. The blossoms have been relatively resistant to injury by spring frosts.—*W. P. Judkins, Virginia Polytechnic Institute.*

LOOK HOW MUCH it pays to package in film made of BAKELITE Polyethylene

Data supplied by **The Dobeckmun Co.**, Cleveland, Ohio.

"Potato sales went up 32%
Apple sales went up 34%
Orange sales went up 52%"

That's the experience of but one of many big supermarkets... after merchandising fruit and vegetables packaged in film made of BAKELITE Polyethylene.

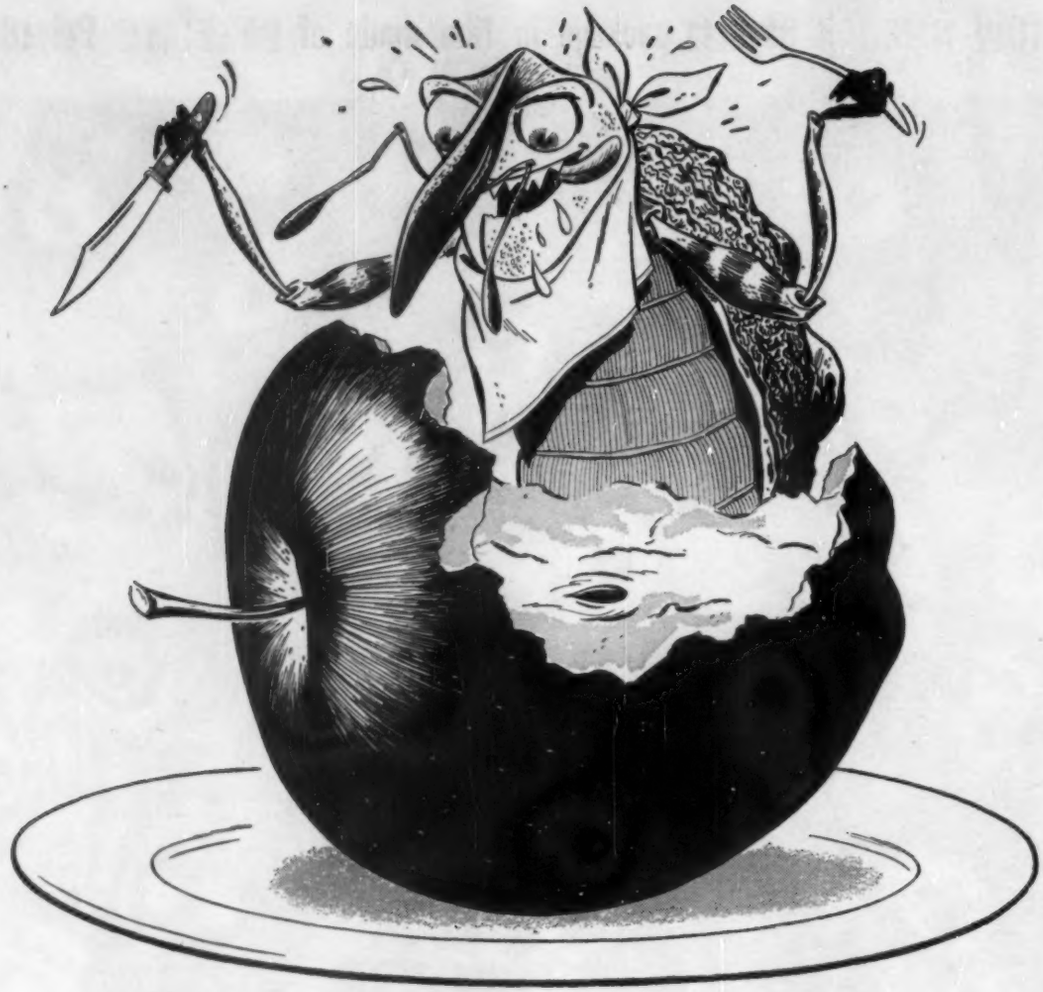
A very important point for growers and shippers to remember is that packaging in polyethylene bags drastically cuts waste at the retail level. Premium prices at the grower level are better protected.

A second and just as important advantage is the ability to create brand identity at the grower level. It has been well indicated that retailers, even though they do their own pre-packaging today, would prefer to buy produce already packaged in polyethylene (and obviously at a higher unit price than growers receive for bulk shipments).

Throughout the country, there are suppliers of packaging bags made of film produced from BAKELITE Polyethylene. See your own local supplier and get the facts right now. And remember, when you specify film made of BAKELITE Polyethylene, you know the resins used are of uniform high quality assured by Bakelite Company, largest producer of polyethylene.

SPECIFY FILM MADE OF
BAKELITE
TRADE-MARK
Polyethylene Plastic

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N.Y.



How big a bite will plum curculio *take from your fruit profit?*

This hungry fellow can wipe out your profits in a tight market. He's a multi-million-dollar menace.

Again this year, growers in all areas will be using dieldrin for the control of plum curculio and cat-facing insects—simply because dieldrin fills the bill better than any insecticide they've ever used.

A circular published by the horticultural department of a leading agricultural university sums it up this way:

"Dieldrin has proved superior to all other materials for control of plum curculio because of its efficiency and its long period of toxicity. Furthermore, it will not leave an objectionable residue at harvest."

Dieldrin is available, under various trade names, as a wettable powder or emulsible concentrate from leading formulators. Only 4 to 8 ozs. of actual dieldrin, mixed with water, make 100 gallons of spray. Dieldrin is compatible with fungicides and other insecticides commonly used in spray schedules.

Don't let curculio put the bite on you . . . ask your insecticide dealer for dieldrin!

dieldrin

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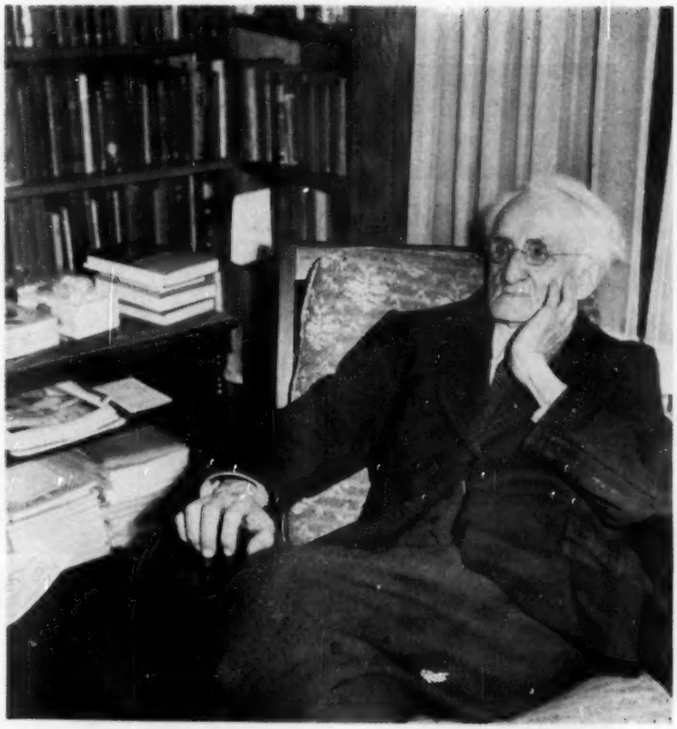
HORTICULTURE'S GRAND OLD MAN

By H. B. TUKEY



TO one of the first frontier pioneer families of Michigan, living at South Haven, along the eastern shore of the lake, on March 15, 1858, was born a son, Liberty Hyde Bailey, Jr. On Christmas night at Ithaca, N. Y., surrounded by the throbbing of the university which he helped to make great, with thousands of plants in his nearby Bailey Hortorium, and amid the kindly thoughts, warm friendships, and deep affections that sped towards him from all corners of the world, this lad—now one of the world's great—died at the age of 96 years and nine months.

His father, Liberty Hyde Bailey, Sr., had come from Vermont as a young man, about 1840, settling 40 miles to the west on a tract of land at South Haven, on Lake Michigan. He was a charter member of the still flourishing South Haven-Casco Pomological Society. He planted orchards which thrice received awards in their class in the state of Michigan. Amid trees, and birds, and all nature, Liberty Hyde Bailey, Jr. grew up.

It was natural that young Bailey should find his way in 1877 to Michigan Agricultural College at East Lansing, the first agricultural college in the country, which this year celebrates its 100th anniversary. From here he graduated in 1882. A few years with America's greatest botanist, Asa Gray of Harvard, and back to Michigan Agricultural College he came in 1885 as professor of horticulture and landscape gardening, the first to hold such a chair. Here he launched a "new horticulture" in which he envisioned dynamic, earth-loving, plant-loving, laboratory and overall-clad work with plants.

But Cornell University needed him, and called him as professor of horticulture in 1888, a position which he held until he became dean and director in 1903, retiring in 1913 at the age of 55. To those who complained of his retiring at so early an age, he replied that he had already over-stayed five years, inasmuch as his life plan had been 25 years of preparation, 25 years of work, and 25 years of doing what he wanted to do!

From his position at Cornell University, his writings, his speeches, and his students moved out to make a tremendous impact upon the world. The students who met informally as "The Lazy Club" at his home on Sunday evenings, became some of America's famous horticulturists. The Lazy Club Code of Nomenclature for the naming of fruits originated here. He coined the word "cover crop."

He emphasized plant breeding and the improvement of varieties, saying that ultimately there must be varieties developed for every local region adapted to that region—a goal still sought by many. He preached the importance of research. He sought always something better, whether it was a plant material or a method. His standards were high, and he literally lifted agriculture by its boot-straps.

It is understandable that he should be the first president of the American Society for Horticultural Science, founded in 1903, and today the greatest horticultural research organization in the world. He was a president of the American Pomological Society, the oldest fruit organization in America, now in its 107th year.

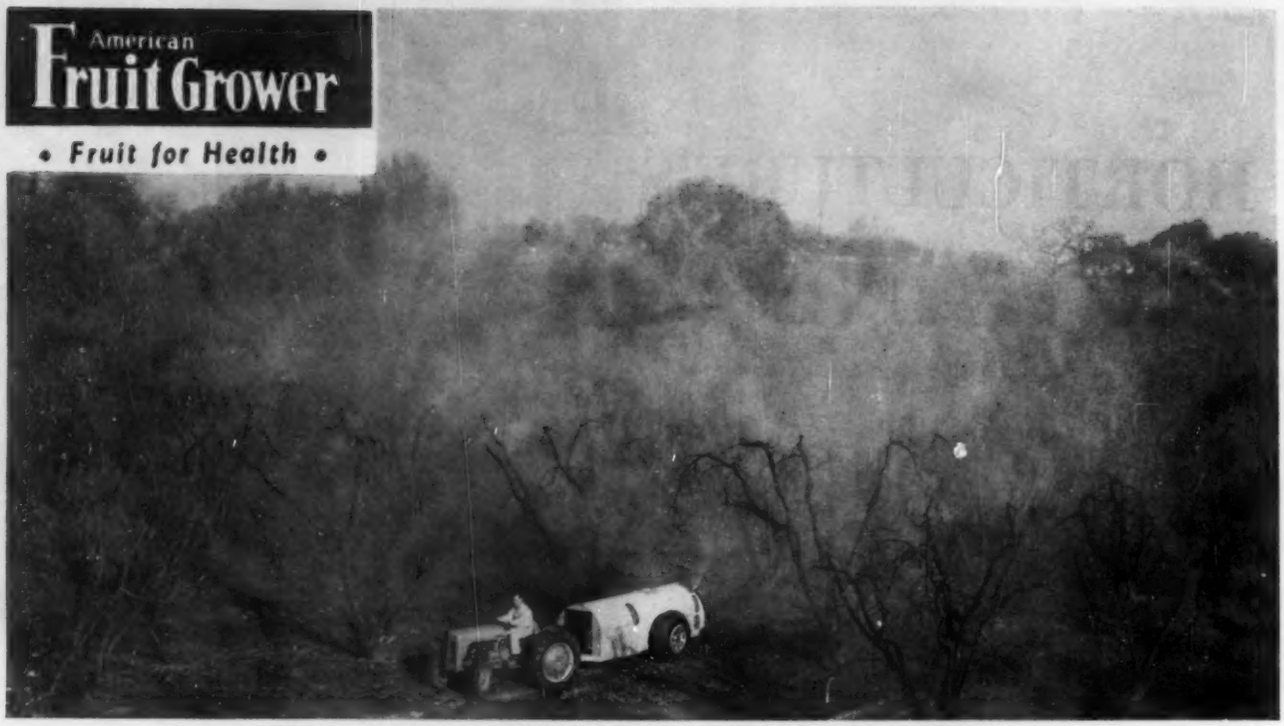
He was not content with research alone. The results must be disseminated and used. And so came his books—*The Farm and Garden Rule Book, The Nursery Manual, The Pruning Manual, Cyclopedia of Horticulture, Principles of Fruit Culture, Hortus*—over 60 in number. Under his editorship came still other books to swell the total to over a hundred. He wrote many times for AMERICAN FRUIT GROWER.

We in fruit culture think of him as a fruit man. Amateur horticulturists think of him as their special leader. Agricultural administrators think of him as a dean. Taxonomic botanists think of him as the great authority on horticultural crops and palms. Nurserymen think of him as a plant propagator. In short, his interests were so great that he stood as a dozen men—helpful, interested, and a marvelous friend to all.

He was a member of numerous learned societies. Honors were showered upon him, as were honorary memberships in such organizations as the Royal Horticultural Society and the horticultural societies of New Zealand, Japan, Norway, China, and France, besides many at home.

But in all this he was the simple, direct humble lover of plants, of man, and of life—ever the servant of all. The world pauses a moment in honor—but only for a moment—and then moves forward as he would wish it to move, better because he passed this way. THE END

American Fruit Grower
• Fruit for Health •



Good insect control is dependent upon thorough coverage of trees with spray material.

An Authority on ORCHARD INSECT CONTROL

sums up the problems of 1954 and forecasts the pattern of events for the future

By B. A. PORTER
U. S. Department of Agriculture

ANOTHER year has slipped by, with its successes and its failures. Fortunately, in the field of orchard insect control success has been the rule; failures have been the exception.

During 1954 the weather went to extremes. In the Northwest, temperatures averaged about three and one-half degrees lower than normal during the main part of the growing season—May through September. This is the period during which most of the season's activity of the codling moth occurs. This pest is much easier to control when the weather is cool, as occurred in the Northwest in 1954.

In the Middle West and East the weather went to the other extreme; it was much hotter and drier than the usual average. In line with the usual experience under such conditions, codling moth was harder to control than had been the case in many recent years. This does not mean that there was a general failure of control efforts; by and large growers are still controlling the worms well—better than was possible with lead arsenate, especially in hot, dry seasons. However, a number of growers had an increase in the proportion of wormy fruit and are finding it necessary to intensify their control efforts.

With a number of cases of increased difficulty in controlling worms, more and more growers are wondering if the codling moth is developing a resistance to DDT, as it did with lead arsenate some years ago. This issue of AMERICAN FRUIT GROWER includes some brief statements on the resistance situation in different fruit-growing areas of the country (page 34). I have not seen many of these statements, but it is my impression that the situation in the country as a whole is not yet clearly defined.

There is some evidence that there are codling moth strains that differ in susceptibility to DDT. There also seem to be strong indications in some limited localities that the codling moth is becoming resistant to DDT; in others weather conditions favorable to the worms or other conditions may account for increases in the number of worms.

Poor control of worms may in some instances have been caused by inadequate spray application. Modern mist blowers, applying concentrate materials, can do a good job. However, in too many instances they are not adjusted to apply enough material to the upper parts of the trees, which results in poor coverage and too many worms in the tops. Some mist blowers are driven through the orchard too fast to give good coverage. In some orchards a good job of pruning is needed to facilitate more thorough spraying. Spraying is still far from an automatic process; the grower still has to watch all details with the greatest of care.

Even if clear-cut evidence of a general build-up in resistance is still lacking, recent developments strongly suggest the pattern of events that led up to resistance to lead arsenate on the part of the codling moth. This pattern also extends to several other

(*Continued on page* 48)

Solving The Problem Of ORCHARD MITES

New materials hold in check these newcomers to the list of troublesome orchard insects

By P. J. CHAPMAN
New York (Geneva) Experiment Station

MITES have now become our commonest orchard pests. This is a development of the past 10 years or so and seems to have started with the introduction of DDT.

We know that DDT is highly toxic to some of the natural enemies of mites and at the same time has little miticidal value. Obviously this creates a favorable situation for mite activity. It probably would be inaccurate, however, to blame DDT alone for this recent mite upsurge. Probably it would be better to ascribe it to the organic pesticides in general (including fungicides) that have now largely replaced the older materials used in the '30's and early '40's.

Just how many different kinds of spider mites may be troublesome to the hardy tree fruits is not known. Not too long ago we recognized only three: the European red mite, the clover mite, and the two-spotted spider mite. Now we have at least seven species in eastern United States and at least 12 if we include the whole country. These mites have probably been here right along in the trees or ground cover but because of their small size and numbers have remained largely unnoticed until now.

From the standpoint of control there are two principal groups of mites: those that overwinter as eggs (European red mite and clover mite) and those that overwinter as adults (two-spotted spider mite and many others). Dormant or semi-dormant applied materials like oil and dinitro compounds (DN-289 and Elgetol 318) have value in controlling the first group, but not the second.

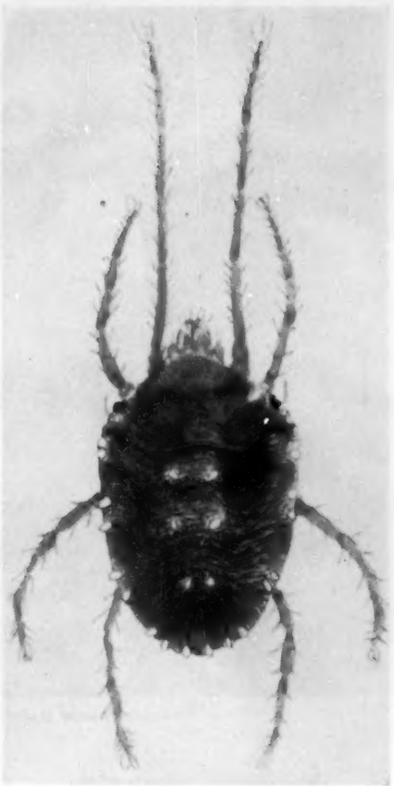
Injury done to fruit crops by mites is indirect, for they attack the leaves. Nature of the damage and its severity varies greatly. It depends on such factors as variety, tree vigor, climatic and weather conditions, and season when peak of mite activity occurs.

Often no measurable harm seems to be done to the crop, even though a sizable mite population may develop, especially if this occurs late in the season. On the other hand, damage may be serious. In one of our experiments, for example, an infestation of European red mite which reached peak activity in late June reduced the yield of Cortland apple trees that year by 28 per cent. This reduction was not evident while the crop was on the trees. We also found that this infestation interfered with fruit bud formation, for the crop the following year was 65 per cent under that of the mite-free trees.

In addition to effects such as these, mites may reduce fruit size and quality, cause leaf and fruit drop, and lower the effectiveness of growth hormones applied near harvest to

(*Continued on page* 58)

Winter eggs of European red mite around fruit spur of apple. (Greatly enlarged.)



Clover mite, adult female.

Two-spotted spider mite, adult female.

European red mite, adult female.

Drawings of mites are by Lydia Jahn Gambrell. While greatly enlarged, they are of correct size in relation to each other.

Smooth-skinned Golden Delicious—the result of a successful spray program.

How to Avoid RUSSETING

Select the proper spray material for the variety and your reward will be apples of satin-smooth finish

By ARTHUR E. MITCHELL
Michigan State College

WITH the emphasis on quality, the proper selection of spray chemicals for good finish on apples is becoming more important each year. The choice of chemicals prior to 1945 for control of diseases was either sulfur, copper, or ferbam, while dormant oils, DN compounds, lead arsenate, and nicotine sulfate were available to combat insects. And, when weather conditions were conducive for fruit russeting, the grower took the loss as a matter of course. Now we have learned some of the factors contributing to russeting and we are able to do something to combat it.

Studies were carried on in the John Woodman Orchard, Paw Paw, Mich., in 1949 comparing ferbam to wettable sulfur on McIntosh, Delicious, Jonathan, and Baldwin. The results of these studies indicated that each material has its place in the pest control program. The use of ferbam on Jonathan increased the amount of severe russeting on the fruit, while the wettable sulfur spray program resulted in very little russeting and good fruit finish. The reverse was true for the varieties McIntosh, Baldwin, and Delicious, as the ferbam program caused the least amount of fruit russeting.

These observations were substantiated by work carried on at Michigan State College Graham Experiment Station in Grand Rapids from 1948 through 1951. It was also learned from this study that in those years when the air temperature did not drop below 33° F. during the period of pink through second cover, there was no severe fruit russeting on any of the varieties mentioned above regardless of whether ferbam or wettable sulfur was used.

This explains in part why severe russeting occurs in some years and not in others even though environmental conditions appear to be the same. Detailed studies have shown that a single night with a low of 31° F. was sufficient to make the difference between no injury and severe injury, using certain spray chemicals. However, even in those years when no severe russeting occurred, a large percentage of the fruit of the Jonathan variety sprayed with ferbam from pink through second cover was slightly russeted. Although it did not detract from the appearance of the apples, light russeting was generally unfavorable because of shriveling when the fruit was stored into January and February.

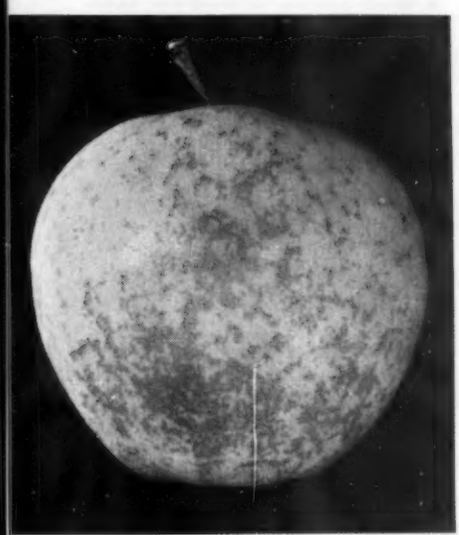
Contrary to this, the use of ferbam on this variety from third cover and throughout the remainder of the season had no detrimental effect on finish. This indicates spray chemicals should be carefully selected, based on variety susceptibility to injury and stage of development of the fruit.

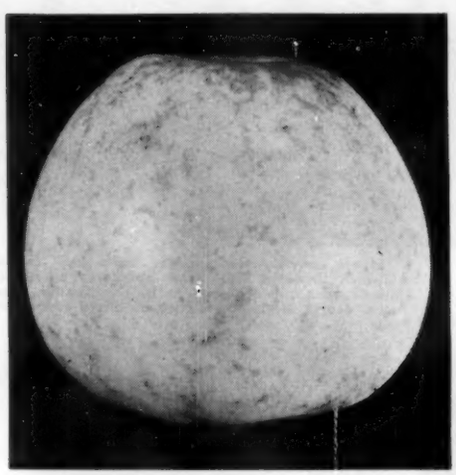
Many favorable comments have been made about captan and the good fruit finish resulting from its use. But captan or any other fungicide cannot correct cold injury from exposure to low temperatures, 32° F. or lower, occurring during the period of pink through second cover. Nevertheless, if unfavorable temperatures have occurred, the use of captan or some other carefully selected organic fungicide will keep the amount of cold injury to a minimum. For example, in one orchard the continued use of wettable sulfur on Delicious, after a single night of 29° F. at the

time of pink, resulted in 53 per cent of the fruits being severely russeted as compared to only 2 per cent of the fruits showing severe russeting where ferbam was used.

A similar occurrence of heavy russeting resulted from the use of dichlone in 1954. For three years prior to 1954, dichlone had been used from green tip through petal fall on a block of bearing McIntosh and Cortland apple trees with no apparent injury to finish. However, in 1954, a drop in temperature to 30° F. right after full bloom resulted in severe russeting of both McIntosh and Cortland fruits, while those of the other spray treatments which included captan and glyodin were only slightly russeted.

In this case the low temperature injured a small number of the epidermal or protective cells of the fruits, creating a means of entrance of spray chemicals into adjoining cells. Consequently, the application of the caustic chemical at petal fall increased the number of injured cells.





Examples of russeting caused by spray materials are shown in these three photos of individual apples.

Injury to protective cells by cold appears to be the reason certain chemicals cause economic injury in some years and not in others. The chemical gains entrance through the broken layer of protective cells, killing adjacent cells and enlarging the area of injury.

Some fungicides will cause russeting on Golden Delicious in Michigan regardless of the weather conditions. Examples of these are ferbam, mercury, and glyodin. Probably glyodin is the worst offender of the three. The question has been raised as to whether russeting occurred because of the type of insecticides used with the fungicide. In answer to this, it has been found that the combination, ferbam plus parathion, does tend to increase the amount of russeting on Jonathan and Golden Delicious over the use of ferbam alone. However, glyodin alone, or in combination with other materials, has caused severe russeting of Golden Delicious in this area, but it has not caused any russeting when used on other apple varieties.

The problem of leaf injury appearing in July or later cannot be overlooked because of the importance of effective utilization of chemicals used to control preharvest fruit drop. Captan has received unfavorable publicity for causing leaf injury in the form of leaf spotting and leaf drop on such varieties as Delicious, Baldwin, and Stayman. In Michigan injury from captan has resulted from its use with incompatible materials or overspraying, developing excessive deposits of captan on the foliage. This type of injury has occurred in mixed orchards of Jonathan, Delicious, McIntosh, and Golden Delicious, in which case leaves of the Delicious trees have been severely injured while the other varieties have shown no apparent injury. This indicates that care must be exercised when captan is used on such varieties as Delicious.

In 1954 arsenical injury was observed on apple leaves in Michigan after lead arsenate was used for the control of apple maggot. This outbreak of injury, while severe, was localized in certain areas of the state. It is interesting that in most cases the outbreak of arsenical injury was related to the use of glyodin with lead arsenate and hydrated lime during periods of high relative humidity.

Fortunately, in 1954 studies were made using glyodin with lead arsenate and it was found that the addition of a half to three-fourths pound of ferric sulfate per 100 gallons would protect against possible arsenical injury. The use of glyodin at this time is favorable in this area because it leaves no undesirable visible residue on the developing fruit. THE END

RESIDUE TOLERANCES

How will the newly established tolerances affect fruit growers?

DURING the past three months the fruit grower has been wondering how his spray program will be affected by the newly established residue tolerances issued October 22, 1954, under the Miller Pesticide Residue Amendment for certain insecticides, fungicides, and plant regulators used on fruits and vegetables sold as fresh products. His concern is justified; however, it does not appear at this time that these newly established tolerances will present an undue hardship on the fruit industry.

As in the past, copper compounds free of arsenic, elemental sulfur, pyrethrum, rotenone, ryania, sabadella, and oils are free of tolerance. But to the surprise of many, the fungicides ferbam, nabam, zineb, ziram, glyodin, and the plant regulators naphthaleneacetic acid and 2,4-D were included in the group for which specific residue tolerances are allowed.

Also, no residue is allowed for the dinitro compounds HETP, TEPP, mercury-containing fungicides, and nicotine-containing insecticides. Nevertheless, the grower will be able to use HETP or TEPP within 48 hours of harvest as in the past without danger of residue for these compounds break down very rapidly following application.

This new regulation does mean that the grower will have to be careful to use pesticides and plant regulators according to the directions given on the labels by the manufacturer, and those advising growers will have to be careful to take full cognizance of possible residues when suggesting the use of certain chemicals. For example, it will be a questionable practice to use DDT closer than one month before harvest on commodities to be sold on the fresh market, or to use mercury-containing compounds on apples later than one week after petal fall to control scab.

The present list of chemicals for which tolerances are given is not complete and more chemicals will be added from time to time. There is no question that certain adjustments in allowable residue will be forthcoming when tolerances have been set too low for economic use and a higher residue will not endanger the health of individuals. Procedures have been set up to handle such happenings. —*A. E. Mitchell, Chairman, Spray Residue Research Committee, American Pomological Society.*

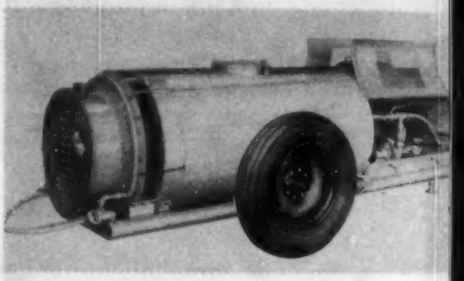
NEW SPRAYERS for 1955

• Latest developments in design, speed, coverage, and spray pattern are incorporated in the new equipment

Work-rated at 70 acres per day, John Bean 40-D Speed Sprayer has 500-gallon tank, Chrysler V-8 industrial engine. A 40-inch axial-flow fan blows over 60,000 cu. ft. of air a minute. Ground clearance can be varied by special spindle.

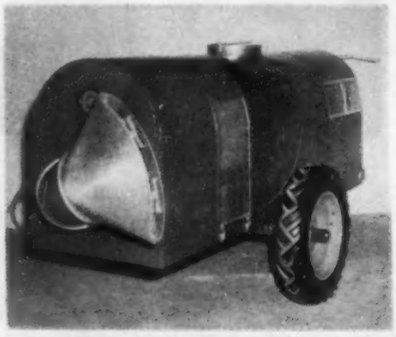
Cardox Model 74 sprayer has Aqua Jet heads. Bulk or concentrate spraying is accomplished by just changing jets. High pressure pump has 60 gpm capacity. Mechanical agitation keeps mixture uniform. Ford V-8 industrial engine. Gives any desired spray pattern.

Myers concentrate sprayer tank has coating which protects steel from corrosive chemicals, cuts tank replacement costs drastically. Uses one-fourth the water needed by dilute equipment.

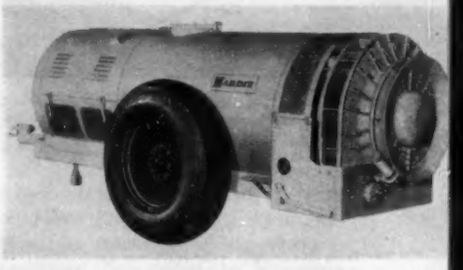


Bes-Spray Model 550 comes with Ford industrial water-cooled engine or Wisconsin air-cooled engine. Tank holds 500 gallons, has strainers that prevent clogging. Adjustable deflectors vary spray pattern. Has axial fan.

Niagara Liqui-Duster dusts in wet weather, liqui-dusts in dry weather for maximum adhesion. Also applies concentrate. Powerful air blast assures even distribution, saves on materials. Light-weight, easy to maneuver. Chrysler industrial 6-cylinder engine.



Buffalo Turbine sprayer has 200-gallon stainless steel tank for concentrates, is streamlined to prevent tree and fruit damage, has two-way adjustable axle. Will spray row crops also.



The Hardie Hurricane 26B has two 26-inch axial fans with opposed blades and a single shaft, gives uniform air flow. It also comes in a larger model 26A, and a smaller, low-priced model 24B which has 24-inch fans.

The Friend Airmaster Dual-Drive sprayer works as a high-pressure sprayer when the pump is driven separately with tractor. It has a 400-gallon, corrosion-resistant tank, 40 gpm high pressure pump, mechanical agitation, 115 hp Ford industrial engine. A 36-inch axial fan delivers 45,250 cfm.

The Kraus and Noonan Air-O-Fan uses cast aluminum wherever possible to reduce weight and control rust and corrosion. Hollow-cone vanes give positive spray pattern control. New model has lower silhouette, greater strength, larger tires to combat mud. Powered by Ford "Y" block engine.

Choosing A Program For CONTROL OF DISEASES

Fruit disease control results obtained in various parts of the country are summarized in this article to assist the grower in making a selection. Certain combinations and special formulations are mentioned, but the individual grower should consult his local agricultural experiment station for further advice, particularly if he selects materials hitherto untried in his locality.
—The Author

By JOHN C. DUNEGAN
U.S. Department of Agriculture

THE numerous organic fungicides now available afford fruit growers a wide choice of materials for their disease control programs. Many of these materials offer a degree of disease control and freedom from spray injury rarely attained when lime-sulfur solution and Bordeaux mixture were the only spray formulations available. However, some of the organic materials are rather specific in their action, while others may be very efficient in one area but cause injury to certain varieties in other areas. The selection of proper materials, therefore, becomes an important problem.

Fire Blight.—The control of pear blight, or fire blight, as it is frequently called, by the use of antibiotic materials is the major development of interest to pear and apple growers. Limited field tests in 1953 indicated the marked efficiency of streptomycin formulations for pear blight control. Extensive field experiments in many parts of the country in the spring of 1954 confirmed and amplified these results. It now appears that the use of streptomycin formulations gives promise of being an effective control for this bacterial disease, long a difficult problem for western pear growers and eastern apple growers alike.

There are many questions still to be answered regarding the use of these antibiotic formulations. However, this much is clear, as the result of the nationwide tests in 1954. If a grower has a block of pear or apple trees that usually is damaged by blight, he should give serious consideration to the possibility of reducing this loss through the use of a streptomycin formulation.

There is clear-cut evidence that streptomycin is absorbed by the leaves. The mechanism by which streptomycin acts to prevent blight infection is not known, but several experiments have shown that streptomycin does *not* check the progress of the disease once the bacteria have produced visible symptoms on the succulent shoots.

Growers planning to use streptomycin formulations, therefore, should apply the first treatment when 25 to 30 per cent of the blossoms are open. Two additional treatments should be applied at intervals of seven days.

The concentration at which antibiotic materials are used is usually expressed as the number of parts of the active ingredients dissolved in one million parts of water. This ratio is usually abbreviated as ppm (parts per million). This term may sound formidable to growers accustomed to preparing solutions on the basis of pounds per 100 gallons of water, but the antibiotic formulations will be marketed in 1955 in containers indicating the amount to use to obtain a given concentration in ppm.

Excellent control of pear blight has been obtained on both pears and apples, by use of streptomycin at 100 ppm, and very satisfactory commercial control has been obtained at a concentration of 50 ppm.

Very little is known of the effect of other pesticide materials upon the absorption of the antibiotic materials when they are mixed and applied together. Until this problem is investigated more thoroughly, it appears advisable not to mix either fungicides or insecticides with antibiotic formulations. Other materials for fungus and insect-pest control may be applied 24 hours later without incurring the risk of reducing the effectiveness of the antibiotic material. The results obtained in 1954 indicate that the absorption of streptomycin is fairly rapid and rain 3 or 4 hours after the antibiotic spray has been applied has little effect upon its efficiency.

Scab on the Rome Beauty variety of apple.

Apple Scab—This brings up the problem of apple scab control. Results obtained during the past several years have proved the value of an early preharvest spray of liquid lime sulfur. This efficient material applied as the buds begin to open affords protection against early primary scab infections. Because of its injurious effect upon leaf growth and fruit set, however, lime-sulfur solution is no longer recommended for scab control during the blossom period. In place of lime-sulfur solution, the current procedure is to use a combination

(*Continued on page* 52)

American Fruit Grower WESTERN SECTION

LABORSAVERS IN THE WEST

Grower-developed ideas ease the important job of soil preparation

By F. LELAND ELAM

WALNUT growers Ralph and George Marvin, of Woodland, Calif., have developed a landplane (right) that has cut ground preparation time by 50 to 60 per cent. It scratches, levels, and patches at the same time, speeding ground preparation for flood irrigation and for harvest.

The landplane consists of a spring tooth for scratching, a bucket for leveling, and a roller for patching and packing. Before they developed the landplane, the Marvins thought they were getting a level floor by other methods, but the Marvins report that the landplane gives a more level ground floor than any method they've tried.

The view at left shows the orchard floor after the landplane has gone over it. The landplane is 20 feet long, with a 10-foot-long bucket attached at the center. A roller 10 feet long and 16 inches in diameter is mounted behind the bucket. Water can be added to the roller for pressure up to 1,000 pounds. A spring tooth unit 10 feet long can be mounted in front of the bucket or behind the roller. The landplane rides on four steel wheels 12 inches wide which can also be filled with water for weight. Cutting depth of the spring tooth unit can be controlled through a hand-turned rod which raises or lowers the bar.

A 9 foot 9-inch alternate throw double disc unit has been mounted in a heavy channel iron frame by orchardist Harold Goodman of Empire, Calif., so that the blades will give a full cut at any depth from 1 to 9 inches.

Cutting depth is regulated by a tractor-powered hydraulic ram which raises and lowers the disc blades through an attachment to an axle across the top of the disc. The axle is offset dropped with an automobile tire at each end.

When the ram is extended, this offset axle is positioned to push the two wheels into a lower position. This raises the height of the disc blades, the wheels acting as the guiding unit for depth regulation. When the ram is completely extended, the disc blades are raised completely above ground level. It can then be transported over highways without cutting road surfaces.

The tongue which attaches to the tractor is adjustable so that pull can be in the center or at either side. At the rear are two rail tongues on which harrows or rollers can be attached.

State NEWS

- **Washington's Concord Grape Production Is Going Up.**
- **Connecticut Growers Discuss Whys and Wherefores of Management Changes**

Big Increase in Grapes

WASHINGTON—Concord grape production is going up! Barring winter and spring frost damage, a production of 50,000 tons in 1955 is forecast by Dr. Walter C. Clore, horticulturist, Prosser Irrigation Experiment Station. This represents a gain of almost 20,000 tons over 1954 output. Highest yield for the state was in 1953 when over 37,000 tons were produced. Last year's low of 31,000 tons was due to spring frost injury.

Growers are advised by Dr. Clore to use a 6-foot high trellis for training new plantings rather than a 4-foot. This insures full utilization of sunlight, Dr. Clore states, which in turn results in higher yields of grapes with higher sugar content.

Insects which may prove troublesome to grape growers in 1955, according to Dr. K. E. Frick, Prosser station entomologist, include cottony maple scale, climbing cutworm, mealy bug, and leaf hopper.

Woodin Retires

CALIFORNIA—Irving J. Woodin retired February 1 as general manager of the California Fruit Exchange, Sacramento, but has been re-employed as a consultant on a part-time basis. Frederick W. Read has been appointed general manager and George C. Leney assistant general manager.

Money-Making Changes

CONNECTICUT—A grower who was first to use a swivel chair on his sprayer, first to use gravity feed into his fruit storage, and first to develop a workable pole-pruning saw—an all-around good grower—was awarded the Certificate of Distinction by the Connecticut Pomological Society during its recent annual meeting in Hartford. The honored grower is Alex B. Smith, of Clintondale.

Part of the two-day program was taken over by the growers themselves when they discussed important "Management Changes and Why They Were Made." C. D. Carlough of New Jersey, started the grower discussion by relating the work being done in his orchards comprising 700 acres. His talk was followed by the following panel of Connecticut growers:

John Lyman stated that the change made in their orchards from Ben Davis to McIntosh, which really had been an accident, had made money for them. He emphasized that young men coming into the fruit growing business should have young orchards to work with.

Joseph Pero made three important changes during 1954. First, he gave up trying to run a roadside stand in order to devote all his attention to his orchard, secondly, he purchased a new tractor and a new sprayer and enlarged his orchard; third, he found that by starting to spray at daybreak and stopping before it got hot, he had no spray burn during 1954.

JOINT CONVENTION

The National Peach Council will hold its 14th annual meeting in joint session with the 96th annual meeting of the State Horticultural Association of Pennsylvania on February 12-16 in the Yorktowne Hotel, York, Pa. Experts in every phase of the fruit industry will be on hand to solve most if not all of the problems which beset fruit growers. John Ruef, of State College, is secretary of the Pennsylvania association and Dr. M. J. Dorsey, 1502 S. Lincoln, Urbana, Ill., is secretary of NPC.

Norman Platt said that growers must consider the fixed costs of fruit growing; that by using power pruners they had cut costs 25 to 30 per cent; that they were pulling out their old trees; that a Ford fork lift handling 32 boxes of fruit from orchard to storage had been a money-saver for them.

William Ravenscroft said their greatest change came when he palletized his storage. With a fork lift truck one man did the work of four or five men at the storage. By attaching lifts to tractors he had handled crates to trucks in the orchard and thereby saved 60 per cent of the labor formerly used to move fruit to the storage.

Frank Rogers said the changes they had made included the use of pneumatic pruners, chain saws, a 24-inch post-hole digger attached to a Ford tractor for digging holes for trees, a fertilizer spreader attached to the front of a tractor, a rotary mower in the orchard, and the use of pallets in their storage. The use of pallets in the orchard also saved on crate breakage.

Wainwright Scott told how they had built up an orchard of 110 acres, at

(*Continued on page* 43)

FRUIT PEST HANDBOOK

(FORTIETH OF A SERIES)

WINTER INJURY TO PEACH

—Southern Form—

THROUGHOUT the southern peach section, east of the Rocky Mountains, it is not uncommon for peach trees to blossom and start to form leave in the spring, only to have one or more branches or even the entire tree wilt and die.

This sudden collapse, after the tree has started a new season's growth on the reserve materials stored in the buds and twigs, is the first indication that the tree has been injured by low temperatures during the winter. An examination made when the first signs of collapse are detected will show no signs of injury to the roots. However, cuts made in the trunk from the ground line to the crotch will show patches of discolored injured tissues varying in size from small localized spots to extensive areas involving the entire trunk. This discoloration is apt to be particularly pronounced in the crotch region.

The wilting of the leaves and branches is the result of this injury which interferes with the normal movement of water and nutrients. Fermentation soon sets in giving the affected parts a sour, decayed odor.

Low-temperature injury to peaches may occur, of course, in any part of the United States, but it is of unusual importance in the southern part of the country where the winters are less rigorous.

This anomalous situation is explained by the fact that once the chilling requirement of a peach tree (from 650 to 1,400 hours below 40° F. depending upon the variety) has been fulfilled, the cambium will resume activity whenever the temperature rises above 50° F. In winter periods of varying duration with temperatures above 70° F. are not uncommon in the South. Growth starts, and the cambium, very resistant to injury while dormant, immediately becomes very susceptible, and widespread damage follows if a sudden drop in temperature to below freezing occurs.

Southern form of winter injury to peach tree. Photo courtesy USDA.

In northern sections rapid fluctuations in temperature are less apt to occur during the winter. Northern peach trees, therefore, while they may be ready to start, are not stimulated into growth because of the normal lower range of winter temperatures and thus escape injury. In the South it is the warm winter weather followed by sudden drops in temperature that causes the damage.

Since this damage is caused by temperature fluctuations, attempts to develop procedures to circumvent it have been of little avail. The risk of winter injury is one of the hazards of growing peaches in the South.—*John C. Dunegan, USDA.*

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A 200-YEAR BATTLE

For two centuries growers have been waging war on the plum curculio, and the battle must continue

By E. H. SMITH

New York (Geneva) Experiment Station

OUR early settlers encountered a new pest which attacked the fruits they introduced from Europe in preference to its native host, the wild plum. Thus began the fruit growers' long struggle with the plum curculio, a struggle which until recently has more nearly resembled a truce than a fight.

The well-deserved reputation of this species as the primary pest of deciduous fruits stems from several factors which operate in its favor. First, its host plants include virtually all of the pome and stone fruits, thus affording a hide-and-seek opportunity. Such versatility also proves advantageous in years of crop failure when species restricted to a single host plant are decidedly reduced.

In addition the activity of the species is closely synchronized with temperature and greatest activity occurs in the season of most unpredictable weather. A combination of rain, wind, mud, and changing temperature often besets the fruit grower intent on thorough control. It is the factor of temperature which has created the "hit and run" illusion so characteristic of attack by this species. His ability to consistently exploit every opportunity to cause injury verges on the uncanny.

Period of Mystery

In viewing the history of plum curculio control three eras are evident. The first might be described as the era of superstition and mystery. This period, beginning in earliest colonial days, was terminated with the introduction of arsenical sprays about 1870.

As would be judged from the control measures undertaken then, the life history of the species was not clearly understood. Control measures included the firing of guns in the orchards, application of snuff to tree trunks, hanging dead mice in orchards and numerous other equally fantastic measures.

Adult plum curculio. Photo by P. J. Chapman.

The possibility of spraying the tree to prevent injury was not unknown, but having no effective insecticide, efforts along this line proved futile. The practice of collecting curculio adults by jarring the trees preceded spraying as a standard control measure. While this laborious method is no longer used commercially it still proves useful in appraising curculio abundance and activity.

Arsenical Age

The second era, the "arsenical age," covered the period from about 1870 to 1942, terminating with the introduction of DDT and other organic insecticides. While the use of arsenical sprays marked a notable advance in plum curculio control, the first form introduced, Paris green, was not widely used because of its severe injury to trees. About 1900 lead arsenate appeared and due to its improved safety came into general use.

One of the striking features of this program has been the variable control

(*Continued on page* 28)

EFFECTIVENESS OF ORGANIC INSECTICIDES IN PLUM CURCULIO CONTROL

Material	Effectiveness		Safety to Warm-blooded Animals	Safety to Plants	Relative Cost
	Specific	General			
Dieldrin	Most effective, combines rapid speed of action and long residual effectiveness.	Very limited, with exception of bugs causing catfacing of peaches. Appears to favor build up of mites.	Safer than phosphates. More toxic than DDT.	Generally safe.	Low.
Methoxychlor	Varies seasonally from good to fair. Slow speed of action but long residual.	Limited. In many cases cannot be substituted for DDT. Appears to favor build up of mites.	The safest of all.	Generally safe.	High.
Parathion	Fair. Rapid speed of action but lacks residual effectiveness.	Excellent. Effective against all peach pests occurring in Northeast.	Highly toxic.	Injurious to certain apple varieties.	Moderate.
EPN	Good. Similar to parathion with slightly longer residual effectiveness.	Good.	Highly toxic. Slightly better than parathion.	Injurious to certain apple varieties.	Moderate.

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CHLOROBENZILATE has given outstanding control of the Two-Spotted Mite, Brown Clover Mite, and *T. macdanieli* on apples and pears throughout the country. It is also extremely effective against the Citrus Bud Mite. CHLOROBENZILATE is safe to use, since it is relatively non-toxic to man and animals, and bees are not affected under normal field applications. It is compatible with most commonly used insecticides and fungicides.

CHLOROBENZILATE, in addition to being highly effective against adult mites, has strong ovicidal properties and long residual action. These combined qualities make CHLOROBENZILATE the ideal miticide for positive mite control, assuring increased yields and improved fruit quality which mean greater profits.

CHLOROBENZILATE is available as 15% and 25% wettable powders. It is also recommended for use on ornamentals and nursery stock as well as fruit.

*"CHLOROBENZILATE" is the brand name for acaricide and miticides sold by Geigy Chemical Corporation.

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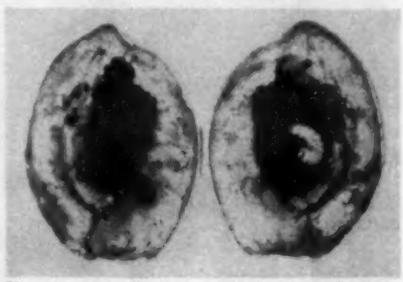
PLUM CURCULIO

(*Continued from page* 28)

on different hosts. For example, control on sour cherries has through the years been entirely adequate while on apples and peaches results have fluctuated widely, never approaching the effectiveness on cherry. Despite extensive research over a period of 40 or more years this point and many others remain unanswered.

Organic Chemical Era

The current era might be described as the organic era, dating from the introduction of DDT. There followed numerous organic insecticides, several of which were far more effective than lead arsenate. Included among these were methoxychlor,



The plum curculio finds most deciduous fruits to his liking. Photo shows curculio injury to peach.

toxaphene, chlordane, benzene hexachloride, and dieldrin, all classed in the same general chemical group with DDT. In addition the thiophosphates were uncovered by German chemists in quest of war gases. Of this group parathion and EPN have proved effective.

Sufficient time has now elapsed to evaluate these materials experimentally and through grower usage. Four of these, dieldrin, methoxychlor, parathion, and EPN, have met with grower acceptance in varying degrees. The question often arises: "Which material is best?" The answer is not simple.

One fact which has emerged after a decade of experience with the modern organic insecticides is that their use frequently tips the balance so that minor pests assume major importance. Consequently, over-all consideration is required in the selection of insecticides or else we merely exchange one pest for another.

And there are other considerations. Is safety to warm-blooded animals an important factor? Does the material have an adverse effect on the trees? Cost? Some facts bearing on these questions are summarized below.

Each orchard represents an individual situation, and there are seasonal and geographic differences to be considered as well. The points enumerated above seem generally agreed upon and should prove useful in tailoring a control program to specific needs. THE END

THE QUESTION BOX

Don't be perplexed! Send us your questions—no matter how big or small. A three-cent stamp will bring you an early reply. Address: The Question Box, AMERICAN FRUIT GROWER, Willoughby, Ohio.

GRAFTED CONCORDS

In the November "Fruit Talk" column I read about Concord grape yields being improved by grafting onto certain rootstocks such as Clinton and USDA 3309. What nursery company has these vines for sale?—*Michigan*

Write the New York State Fruit Testing Association at Geneva, N. Y., for they have propagated many of the varieties listed in their catalog to several rootstocks. Planting stock of these grafted varieties, however, is not great and we would advise placing orders a year in advance. The limiting factor to the number of grape vines that can be grafted is the amount of stock material available. This is in very limited supply for all of the numbered stocks but in larger supply for Clinton.

DDT SPRAY

Is there a chemical which may be added to DDT spray to prolong its effectiveness?—*Indiana*

A chemical "extender" has been discovered by USDA scientists. When methyl ethyl kretone was used instead of oil as a solvent for DDT, spray residues killed flies on foliage of spruce and pine trees for 60 days and more, whereas previously 15 days was the limit. However, because of residue problems, it is doubtful if such formulations will ever be recommended for fruits or vegetables.

SPRAY PROTECTION

What manufacturer makes face guards to protect from irritating sprays and dust, as well as giving good vision?—*New Hampshire*

Any one of the following companies can help you: Chicago Eye Shield Co., 2300 Warren Blvd., Chicago 12, Ill.; Kimball Safety Products, 9310 Wade Park Ave., Cleveland 6, Ohio; Mine Safety Appliances Co., Pittsburgh 8, Pa.; Willson Products, Inc., Reading, Pa.; Acme Protection Equipment Co., 3037 W. Lake St., Chicago 12, Ill.

SMALL POWER SPRAYER

I would like the address of a manufacturer of a small power sprayer, about 10 or 15 gallons capacity with an agitator, for a small orchard.—*New York*

The following companies make small power sprayers: F. E. Myers & Bros. Co., Ashland, Ohio; John Bean Division, Food Machinery & Chemical Corp., Lansing, Mich.; H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago 11, Ill.

SPRAYS AND SPRAY SCHEDULES

I am moving to Martinsburg, W. Va., soon, where I will have 900 apple trees and 300 peach trees. What can you tell me about sprays and spray schedules for that area?—*Indiana*

Write Edwin Gould at the University Experiment Farm, Kearneysville, W. Va., and ask him to send you the spray schedule for West Virginia for 1955. Mr. Gould is an expert on spray problems and you would be well advised to follow his directions. For spray materials, ask the companies that advertise spray materials in AMERICAN FRUIT GROWER for the names of dealers in the area in which you are interested.

"I cut spraying time in half with a Myers Concentrate rig and still get better fruit,"

says G. G. HUDDLESTON,
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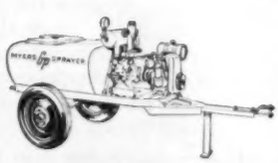

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WINDFALLS

It is said that Isaac Newton while sitting under an apple tree was struck on the head by a falling apple. Thus he conceived the great truth of his Law of Gravitation.

By HENRY BAILEY STEVENS

Haws, Worms, and Foxes WHEN Bernard Wilke of Chippewa Falls, Wis., thinks of windfalls, there bobs into his mind the memory of thorn apples.

"I was a little fellow," he writes. "It was my first season to country school at Phillips, Wis. Two brothers went along with a neighbor boy after cows. He hastened away but soon came back and gave us what he called thorn apples. A neighbor who was born and grew up in Indiana said, 'There they call them haws.' Most likely the plant is the hawthorn."

Mr. Wilke associates our ten-dollar prize with windfalls of thorn-apple quality.

Buckets for Defense SEVERAL contributors stress the reward for unusual effort. J. G. Laughlin of Springfield, Mo., writes: "After three dry years I have learned that young fruit trees can be well rooted the first year by terracing land before setting and planting trees in a slight depression so that rain water can settle near the tree. After each rain I use two small buckets to refill these depressions from small pools in the furrow above."

Light level terraces enable him to get strawberries well rooted also. On newly set trees he uses cylinders of screen wire with burlap to cover the top; and on peaches red potato sacks upside down to protect them from grasshoppers.

"These ideas involve a lot of work, but the satisfaction is my reward."

Another Missourian, Guy Trail of New Haven, tells how he has made an exciting reality out of a rosy dream of 30 years ago when he was a student at Arizona University:

"Then I envisioned the large-clustered Old World grapes that grew to perfection in the warm, irrigated valleys of Arizona and California growing some day in my native Missouri. I felt that the needed hardiness could be infused by hybridization. Today, after long waiting and testing of the new varieties offered by American and French hybridizers, I am growing hardy grapes that are identical in fruit and foliage to some of the Viniferas of the South west. I have at least half a dozen varieties in my test vineyard that can convince the most skeptical observer. It merely required a little time."

For sheer determination to override all obstacles, however, we must hand it to Alvina H. Edmondson of Tucson, Ariz. Here is her story:

She Dozed Out the Caliche "'YOU can't raise fruit here!' said my sister after I had lost my little orchard and garden with nematodes.

"We live in sunny Arizona on my mother's old homestead. We are up on a high knoll where we get all the hot winds that blow in the summer and all the icy ones in the winter. We have extremely dry conditions all year.

"We have all the bugs anyone ever heard of, I think, plus all the plant diseases that any orchardist doesn't want to think about. Caliche is found one and a half feet below the surface and continues on down to about six feet.

"Well, I have a love for gardening and a 'never say die!' spirit, inherited from my pioneer parents, so I hired a bulldozer and had all the caliche taken out of the plot where I decided to replant the or-

chard and garden. I had new soil put in. I planted six different kinds of the finest fruit trees, two pecan trees, grapes, pomegranates, and roses.

"What happened? You probably guessed. The nematodes took over—especially the roses. So I dug the roses up, carefully-soaked them for three weeks in water to which vitamin B had been added. Then I replanted them, sowing barley in between them. In the spring this green barley was turned into the soil. The roses have done well since.

"Knowing that we must live with nematodes, I have decided to carry on a schedule for my trees and roses as follows: In the fall I cultivate the soil around each fruit tree and rose bush and bury the knee-high green weeds around them. Over them I put heavy mulch of horse manure, then sprinkle five per cent chlordane on top of that and water down. This stays undisturbed until the next fall, when it will be time again to cultivate and repeat the process.

"My trees are sturdy, heavy bearing, and the fruit is delicious.

"One of my pomegranates bore 160 large, beautiful pomegranates one year—some of which were taken to our county fair and won first prize."

A Prize for Brotherhood HALF the windfall this month goes to Mrs. Edmondson, and the other half to Mrs. John W. Boone of Elliott City, Md., for the following choice contribution:

"My orchard is small and I market my fruit at the house through roadside signs. I like to meet people, and this gives me a chance to meet and talk with many different persons. One of the most gratifying experiences I have had happened last summer. A colored woman with three small children drove in for some peaches. When the children saw my Summer Rambo apples, they asked their mother to buy them some. She told them she was getting peaches and she didn't have enough money to buy apples too. They looked rather disappointed but they did not say another word. I took three of the largest apples from the basket and handed them to the children. They would not take them until their mother told them it was all right to do so. Those apples spoke to the children in a language they could understand, of the brotherhood of man; for I heard one of them say, as they walked back to their car, 'Her don't hate colored people, do she?' "

Address your "Windfalls" contributions to Henry Bailey Stevens, AMERICAN FRUIT GROWER, Willoughby, Ohio.

Let The **Niagara** Field Man Chart A Money Earning Protective Program For You

A FEW OF MANY Niagara ORCHARD MATERIALS

- KOLO* Dusts and Sprays
- NIATOX* 50 Spray (DDT)
- NIAGARAMITE* (Aramite)
- SUSPENSO* Lead Arsenate
- DINITRO DRY SPRAYSPREAD

*T. M. Reg. U. S. Pat. Off.

The right kind of dust or spray material applied *right* and at the *right* time means a heavier harvest of *clean*, top grade fruit and bigger profits for you.

Niagara has the right insecticides and fungicides to combat every threat to your crop. And your helpful Niagara field man has the experience and "know how" to guide your protective program from dormant right up to harvest. Serving you is his business. It will mean *more business for you* if you call him in now.

Niagara INSECTICIDES AND FUNGICIDES

Niagara Chemical Division
FOOD MACHINERY AND CHEMICAL CORPORATION

Middleport, N. Y., Richmond, Calif., Jacksonville, Fla., Tampa, Fla., Pompano, Fla., Wyoming, Ill., New Orleans, La., Ayer, Mass., Harlingen, Tex., Pecos, Tex., Yakima, Wash. **Subsidiary:** Pine Bluff Chemical Co., Pine Bluff, Ark. **Canadian Associate:** NIAGARA BRAND SPRAY CO., LTD., Burlington, Ontario.

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*Trade Mark

"...99.34% Clean Apples!"

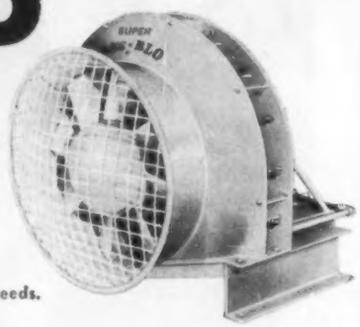
"...won first place in Illinois Clean Apple Club. We do all our spraying with Bes-Blo units on our 250 acres of apples and pears, and have cut our spray materials cost 1/3 and spraying time in half! "We get complete coverage as shown by high score of 99.34 clean apples! Labor savings amount to 2/3...with 3 Bes-Blos we eliminate 6 men."

J. J. Boyd & Sons, Cobden, Illinois
CLAUD J. BOYD
Manager

CLEANER FRUIT—AT LOWER COSTS...
WITH

BES·BLO

Growers over the entire country have enjoyed doing their biggest spraying jobs faster, better and at lower cost. Easily attached to your present high pressure sprayer.



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—one just right for your needs.

The New

BES·SPRAY

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Even More Power for '55

New—Greater power and air volume.

New—Larger Tank Capacities

New—Special non-clog strainers

Efficient Besler High Velocity axial fan.

Adjustable deflectors control spray pattern.

Your choice of latest heavy duty overhead valve water-cooled engine . . . or powerful air-cooled engine.

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MORE SPRAYS *with* LESS LABOR

That's grower LaMont's record since changing to concentrates

By T. E. LaMONT
Albion, N.Y.

THE year 1946 was the last one that we did all our spraying with high pressure sprayers, as reported in the New York State Horticultural Society proceedings for 1954. In 1947 we started using a Speed Sprayer model 36. This machine was used for 5 years, 1947-51, and then traded for a 36L machine, which was used in 1952 and 1953. The high pressure sprayer was used after 1946 on those blocks where the trees were smaller and on an old block where the trees were all sizes as a result of replants. The high pressure sprayer has been used less and less even on these blocks as the years go by.

We used a filler truck most of the time in 1947, 1948, and 1949. After that the filler truck was not used on apples, because of the convenience of refilling stations. In 1953 we went from 1X to 3X concentration in all sprays except the dormant, the oil, and the thinning sprays.

The change from high pressure sprayers to speed sprayer and refill truck cut man labor in half. Eliminating the refill truck cut out one-third of the man labor used with the speed sprayer and refill truck. *The change from 1X to 3X concentration reduced the man labor 31 per cent.* One man now did in two days what formerly required three days. Thus in 1953 the man labor per acre per spray was less than one quarter that used in 1946. During this period the number of sprays increased from 9½ to 15 (1953 was a bad scab year).

To apply 9½ sprays in 1946 required 12.2 hours of man labor per acre, as compared with 4.1 hours in 1953, when 15 sprays were applied. In spite of the larger number of sprays, two-thirds of the man labor was eliminated during the period 1946 to 1953.

Quick Coverage

The sprayer hours per acre show that in 1946 with high pressure sprayers it took a half hour to cover an acre on both sides. In an hour 2

ORTHOCIDE

"checked scab that another fungicide failed to stop"

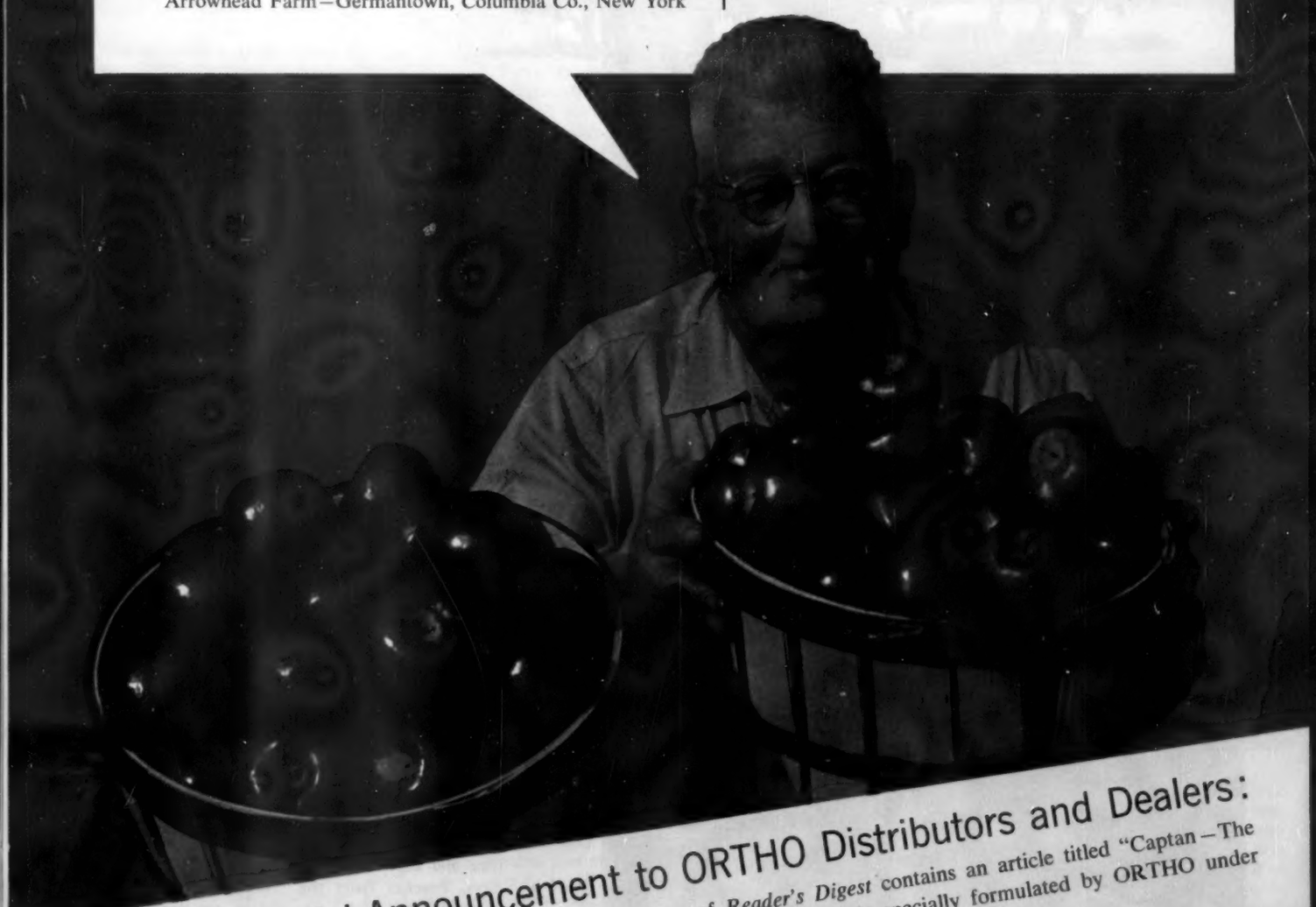
"improved finish at least 50%"

"brought at least 25% better price per box"

Say RAY CARLSON (shown here) and HAROLD LASHER
Arrowhead Farm—Germantown, Columbia Co., New York

"We started out last season with another fungicide," says Ray Carlson, "but when scab appeared we switched to ORTHOCIDE—which checked the scab. In fact, ORTHOCIDE gave us 50% improvement in the finish of our apples. The finer appearance was worth at least 25% more per box.

"My partner Harold Lasher and I figure that an ORTHOCIDE spray program costs us no more than other programs. Although the price per pound is greater, we don't have to use as many pounds. And, of course, the results put us way ahead."



Special Announcement to ORTHO Distributors and Dealers:

The January issue of *Reader's Digest* contains an article titled "Captan—The Amazing New Fungicide." Captan is specially formulated by ORTHO under the brand name ORTHOCIDE.

Growers report:

GREATER NET PROFIT WITH ORTHOCIDE

in a complete ORTHO program

Proved and acclaimed in many leading fruit districts. ORTHOCIDE is a top quality formulation of the new fungicidal chemical, captan, manufactured with exceptionally fine particle sizes and superior sticking, wetting and spreading qualities. As part of a complete ORTHO spray program it aids fruit growers in making more profit.

For *best* results, ORTHOCIDE should be used in a complete ORTHO spray program and only with products as recommended by your ORTHO Fieldman.

Costs 25% less than former sulfur program— Mr. and Mrs. Fred E. Bergman, New Carlisle, Clark County, Ohio. Used sulfur in '53. His McIntosh block was badly infected with scab. Only 100 bushels were saleable. In '54, using ORTHOCIDE program, he had 1400 saleable bushels of McIntosh, even though scab was prevalent in area. Mr. Bergman states that the full ORTHOCIDE program —notwithstanding higher unit price per pound — cost approximately 25% less per bushel than his former sulfur program. In addition to this saving, he realized higher profits due to increase in size of fruit, number of saleable apples, and increase in amount of Fancy grade fruit.

Peaches have better keeping qualities. Both baskets of peaches on left are from the same mid-western orchard, picked at the same time and kept at room temperature for 11 days. Peaches from the ORTHOCIDE-sprayed block (left) are still in excellent condition. Peaches that were sprayed with sulfur (right) are beginning to mold and rot badly.

"Apples . . . bringing $1.50 more per box"

"Fancies increased 50%"

"First year in history with practically no scab"

"Peaches, cherries, strawberries and apples last longer"

Yield increased 2,000 bushels—Ohio. George Karnes, Jr., Karnes Orchard, Hillsboro, Highland County, Ohio. Adopted full ORTHOCIDE program in '54. Noticed results immediately in improved foliage. Credits ORTHOCIDE with boosting yield 2,000 bushels. ORTHOCIDE increased his Fancy pack by at least 20% bringing $1-1.50 more per box. Says Mr. Karnes: "ORTHOCIDE gave me the finest finish I've seen in 25 years of apple growing." Also used ORTHOCIDE on his peaches and plums and credits it with giving him more first grade and Fancy fruit.

50% increase in Fancy pack—Michigan. Robert J. Paine, Paine Farms, Fennville, Allegan Co., Michigan. In '53, started off with sulfur but switched to ORTHOCIDE for late cover sprays. Credited ORTHOCIDE with increase of 25% in Fancy grade. In '54, switched to *complete* ORTHOCIDE program. Although '54 was poor growing year with area average around 35% of normal crop, Paine Farms had 75% crop and 50% increase in number of Fancies. Says Mr. Paine: "An ORTHOCIDE program, in my opinion, is the most effective and profitable available."

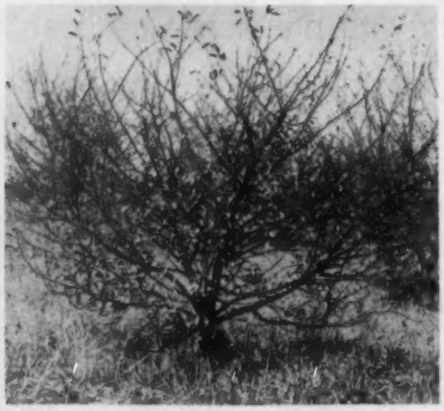
Almost 100% free of scab–New York. Asa De Right, Marion, Wayne County, New York. First time in 10 years without scab. Size and finish superior to previous crop. In an "off" year for Greenings, Mr. De Right increased yield by 2,000 bushels. He attributes this directly to ORTHOCIDE. Mr. De Right also considers this fungicide less expensive than other materials: "Sulfur sprayers were having a hard time getting enough sprays on, with all the rain we had. I didn't have the expense and trouble and got far better protection." On his ORTHOCIDE-treated cherry trees: *no* leaf spot—larger cherry yield.

"Russeting on Red Delicious reduced to less than 5%"—Mass. George and Alfred Marshall, Fitchburg, Worchester County, Massachusetts. Tried ORTHOCIDE program on Delicious in '53. Excellent disease control. In previous years, russeting had reduced the number of Fancy apples by as much as 30%. They credit ORTHOCIDE with cutting loss to less than 5%. In '54, extended full ORTHOCIDE program to Red Delicious, Cortlands, Baldwins and McIntosh. Credits an ORTHO spray program with considerably larger Fancy pack.

"Peaches, cherries, apples last twice as long." Fruit stand operators, Dot and Lou Schmall, Sodus, N. Y., inspect perfect ORTHOCIDE-treated peaches that travelled 3 days in 75° weather after 22 days in cold storage. "Here at our stand, we have found that ORTHOCIDE-treated apples, peaches and cherries are of superior quality and hold up about twice as long as other fruit. Naturally fruit that looks better and lasts longer is a better buy for us. From now on we want to be sure that the fruit we buy is ORTHOCIDE-treated."

Higher yield and better quality—R. S. Pearson, Lockport, Niagara County, N.Y. In '53, used ORTHOCIDE for all orchards except one sprayed with other fungicide. Only orchard in which scab appeared was in plot treated with other fungicide. While general area averaged 15% loss to scab and growers using other materials had lower yields than estimated, Pearson Orchards ran 20% above yield estimates. In '54, used complete ORTHOCIDE Program. Finest crop ever for both yield and quality. Better keeping qualities, too.

"CHERRIES 96% TO 99% NO. 1 GRADE OR BETTER"



Luxuriant foliage in mid-October. Orrin L. Ensfield points to thick, lush foliage of ORTHOCIDE-treated cherry trees. Photo on right shows cherry tree from nearby orchard – typical of trees that were treated with other materials. Trees that were not protected with ORTHOCIDE were completely defoliated in mid-October when these pictures were taken.

Michigan orchardist reports ORTHOCIDE brought bonus cherries—first year in history without apple scab problem

Controlled leaf spot and brown rot—Orrin and Edwin Ensfield, Ganges, Allegan County, Mich., report that their cherry and apple orchards had the best year ever. Some cherry orchards in same area, treated with other fungicides, were about 50% defoliated at time of picking due to leaf spot, and about ⅓ of their crop was infected with brown rot. But the Ensfield cherries, protected with an ORTHOCIDE program, were 96-99% No. 1 grade or better.

Cherries brought bonus

Michigan fruit canners give a bonus of $340 – or the value of 1½ ton of cherries – for every 50 tons that exceeded #1 grade. The Ensfields figure that their bonus paid entire cost of ORTHOCIDE spray program.

Virtually no apple scab!

The Ensfields give credit to ORTHOCIDE for the first harvest in all their years of apple growing without an apple scab problem. Out of 3,500 bushels of McIntosh not even 5 bushels had scab. In the past, he has had as high as 700 bushels of scabby McIntosh alone.

Increased yield in "off" year

In contrast to lower crops in same area, Ensfield Orchards had larger crop in '54. The quality was so fine, he could pack right in orchard and market as #1, saving cost and labor of sorting.

"In off year—biggest Delicious crop the farm has ever produced"

Angelo A. Ricci, Lyndonville, N.Y.

At least 20% more top grade apples—Angelo Ricci, Lyndonville, Niagara County, N. Y., reports that he used ORTHOCIDE in later sprays only, in '53. Finish superior to apples in area sprayed with other materials—at least 20% more top grade. Normally, top grade brings 30-50¢ more per box for canning apples and 50¢ up for his fresh market fruit.

On basis of these results Mr. Ricci went on complete ORTHOCIDE program in '54. Even though it was supposed to be an "off" year for some varieties for yield, he got the biggest crop the orchard had ever produced.

Donald McLeod, McLeod Bros. Orchards, N.H.

"ORTHOCIDE helped us pack 85% Fancy grade"

"Finest fungicide for disease control and finish"—Donald and Kenneth McLeod, Wilton, Hillsboro County, N. H., say in previous years about 50% of the Red Delicious crop was marred by russeting. In '53, they used ORTHOCIDE on Delicious and Baldwins. Crop was practically perfect.

In '54, the McLeods adopted a complete ORTHOCIDE spray program on all varieties susceptible to russeting. When period of rains set in, they dusted some blocks with another fungicide. Only these blocks showed any russeting. Donald McLeod credits ORTHOCIDE for packing 85% of crop as Fancy grade, bringing at least $1 more profit per box. In previous years only about 50% of crop made Fancy rating.

Say the McLeods: "We consider ORTHOCIDE the finest fungicide for disease control and fine finish."

Strawberries—price increased 50%!

New Jersey growers have reported yields and selling price of ORTHOCIDE-treated strawberries increased 50% due to control of Botrytis rot and improved size, firmness and color of fruit.

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For best profit-making results—ORTHOCIDE should be used as a part of a complete ORTHO Spray Program

Don't tie yourself down to old fashioned disease controls that place a ceiling on your profits. Cash in on higher net profits this year. Outstanding ORTHO products for use in ORTHO programs on various crops are:

ORTHOCIDE 50 Wettable
ORTHOCIDE Dusts
VAPOPHOS 15 Wettable
ORTHOTRAN 50 Wettable
VAPOTONE XX Spray
ORTHO Standard Lead Arsenate
PERSISTO Wettable (50% DDT)
TAG Fungicide
ORTHENE 3-D Wettable
ORTHO-MITE 15 Wettable

Plan your profit-making 1955 ORTHO spray program now. For the full ORTHO program on each of your crops call your nearest ORTHO Fieldman or nearest ORTHO office.

On all chemicals, read directions and cautions before use.

World leader in scientific pest control

ORTHO

CALIFORNIA SPRAY-CHEMICAL Corp.
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Whittier, Calif.
Caldwell, Idaho
Maryland Heights, Mo.
Oklahoma City, Okla.
Phoenix, Arizona

acres were covered on both sides or 4 acres on one side. In 10 hours 40 acres were covered on one side.

In 1953 with the speed sprayer at 3X concentration the rate of application was about double that in 1946. It took only about a quarter hour in 1953 to cover an acre on both sides. In an hour about 4 acres were covered from both sides or 8 acres on one side. Thus, in 10 hours 80 acres were covered from one side, on the average. During the scab season we covered 100 acres on one side in 9 hours.

For apple scab we spray only from one side and cover ahead or during the rain. The speed of travel is governed by wind conditions, which affect the spray material reaching the tops of the trees. When conditions are favorable, we travel 5 miles an hour. During the summer sprays we usually travel 3½ to 4 miles an hour, according to our tractor speedometer. We nearly always spray with the wind, and spray one side of the trees at a time. This not only saves material, but also doubles the amount of time that a fresh deposit is there to kill codling moth and apple maggot.

When 1X was used the gallons applied per spray were fairly constant at about 300 gallons per acre or 8 to 9 gallons per tree. When 3X was used this was cut to about 100 gallons, or one-third that with 1X. Thus the amount of spray material applied per tree or per acre was about the same at 1X and at 3X.

Per Acre Spraying Cost

In calculating costs, man labor was figured at $1 an hour and tractor at 80 cents to offset any trends in labor and equipment rates. In spite of the increase in number of sprays from 9½ in 1946 to 15 in 1953, the cost of labor and power to spray an acre for the season decreased from $21.96 to $16.50, or a reduction of about 25 per cent.

The total cost of spray material in 1953 was 65 per cent higher than in 1946. This increase was due to more sprays, the addition of miticides, and to the higher cost of insecticides and fungicides in 1953 than in 1946.

Yields per acre have tended to increase during this 8-year period. Yields were highest in 1950 and 1951, when the apple crop was large in the state as well as in the nation. The total spraying cost per bushel, including material and cost of application, was 20 cents a bushel from 1946 to 1949. With the high yields of 1950 and 1951 the spraying cost dropped to 16 cents, but it reached the high point of 21 cents in 1953. Good control of insects and diseases was obtained throughout the period. THE END

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MOST MODERN HYDRO-COOLER YET!—

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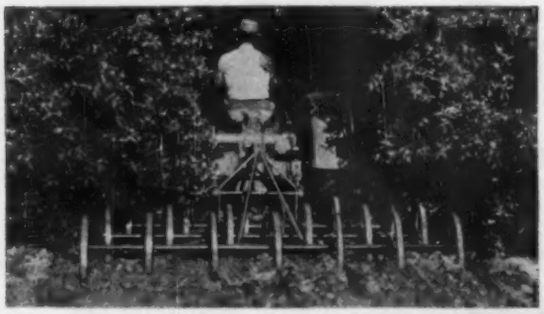
You weave quickly and easily in and out among trees with the low profile, full-swinging drawbar and quick-acting brakes of America's Handiest Grove and Orchard Tractor. You get stability to work fast and safely on hillsides from its low center of gravity and four-wheel design with adjustable tread, front and rear. Correct weight distribution gives you fore-and-aft stability, sure-footed traction, positive steering.



NEW Spring Tooth Harrow tears out weeds and grass with powerful penetration . . . makes fine level seed beds. Harrow lifts hydraulically to shake out trash, for U-turns, backing, transport or storage. Mounts in a jiffy on Eagle Hitch or other 3-point hook-up.

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CODLING MOTH AND DDT

IS codling moth building up resistance to DDT, thus presenting another problem for the entomologist and apple grower? Three experts present results of recent surveys and experiments.

OHIO

Data taken in 1952, 1953, and 1954 from plots at the Hamilton County Experiment Farm, Hamilton, Ohio, show definitely that the population of codling moth in this orchard has developed a resistance to DDT. Resistance may also be present in other apple orchards of this area as indicated by difficulties in control with DDT, but of this there is no definite proof.

Resistance to DDT is a serious problem as it is almost sure to appear in other orchards in the future. Just how fast such a development will occur, no one can say. Fortunately, the great majority of Ohio orchardists are still obtaining excellent control with DDT as was shown by experiments and surveys during the past year. The difficulties in controlling codling moth in 1954 were due to a season favorable to codling moth rather than to the general development of resistance.

Even if the moth in your apple orchard does take on this objectionable trait, it can still be controlled. Experiments at the Hamilton County Orchard show that effective results can be obtained with materials such as parathion, EPN, Diazinon, and different formulations of ryania. A return to a lead arsenate schedule gave fair control of worms but stings were abundant and the foliage was damaged. It seemed, however, that one or two more early-season applications of lead arsenate might be used to advantage in some instances.—*C. R. Cutright, Ohio Agricultural Experiment Station, Wooster.*

INDIANA

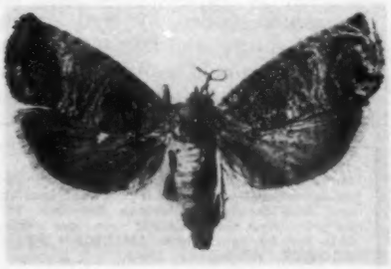
Injury by codling moth has been increasing in southern Indiana, southern Illinois, and western Kentucky since 1952. Field-laboratory experiments conducted during the last two years, using progeny of codling moth larvae collected from several orchards in Illinois, Kentucky, Tennessee, and Washington, have revealed only one strain that is possibly resistant to DDT. DDT has been used in some of these orchards since 1945.

The strain most difficult to control with DDT originated near Gleed, Wash. The possible resistance of this

strain was evident when the quantity of DDT was reduced to three-fourths pound of a 50 per cent wettable powder per 100 gallons of spray, but good control was obtained when the usual strength, 2 pounds to 100 gallons, was used. Certain of the test strains were more vigorous and entered both sprayed and unsprayed apples more readily than others.

Although these experiments did not give evidence of the development of DDT-resistant strains of the codling moth, observations and growers' reports lead me to believe that resistant strains are present in certain orchards. However, resistance is probably not the primary cause of present failures in codling moth control. Weather conditions and changes in spray practices have been important factors.

It is well known that the weather has a marked influence on codling moth activity. Even with DDT this has been observed previously. For example, in a test at Vincennes in 1944, a year that was hot and dry, codling moth larvae entered 13 per cent of the fruit on trees that received 10 DDT cover sprays, whereas on the



Female Codling Moth

same trees in 1945, a cool, wet year, only 2 per cent of the fruit was injured although only 7 DDT sprays were applied. Weather conditions were especially favorable for codling moth activity during 1953 and 1954, more so than in any of the previous three years. Codling moth damage was greater in 1952 than for several years and it has increased each year since.

Many growers have changed their methods of spraying. They have shifted from water-borne to airborne sprays and from hand-operated guns to mechanically directed spray outlets. Some, also, are using concentrate sprays instead of dilute liquid sprays. These changes in methods have led to less uniform and smaller deposits of insecticides, and consequently to poorer control.

This is especially true when the trees are not topped or pruned so that the spray can be blown readily into their centers. Because these sprayers can move rapidly, many

(*Continued on page* 36)

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This complete plant food is specially formulated to supply maximum nutrient requirements of high-value crops. It helps provide the balanced feeding that brings you size, quality, and even flavor in the harvested crop that demands top-of-the-market prices.

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ACP Amid-Thin has been thoroughly tested and proved, and is now in wide use. Containing naphthylacetamide as the active ingredient, it has been used with great success on over 20 varieties in such apple-growing areas as New York, Massachusetts, Virginia, West Virginia, Maryland, Michigan, Indiana, Missouri, Ohio, California, Washington, Pennsylvania, Oregon and parts of Canada.

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1. **Can be used safely at such early stages of development as late bloom and petal fall without injury to foliage.**
2. **This early thinning without foliage injury will induce vigorous shoot growth and good size fruit, and will give a more favorable leaf-fruit ratio for fruit bud formation. This is especially important in aiding annual bearing of biennial bearing varieties.**
3. **Has a wider range of safety at concentrations necessary for thinning, so there is less likelihood of over-thinning.**

ACP Amid-Thin has been sold commercially for two years. Where properly applied, it has done its work both safely and effectively. Why not put it to work for you?

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AGRICULTURAL CHEMICALS DIVISION

Originators of 2,4-D and 2,4,5-T Weed Killers

WEEDONE ACP WEEDONE

CODLING MOTH

(*Continued from page* 35)

growers are not applying sufficient material for best moth control.

The results of tests at Vincennes illustrate what I mean. Trees sprayed nine times with a 6X DDT concentrate averaged 39 per cent of wormy fruit in 1953, while adjacent trees sprayed with a dilute liquid spray by means of hand-operated guns averaged only 6 per cent. When the trees on which the concentrates had been used in 1953 were sprayed in 1954 with DDT applied with hand guns, only 2 per cent of the fruit was wormy.

Most of the codling moth injury experienced in 1954 can be avoided by improved pruning, adequate and more frequent spray applications, and careful timing. Sprays containing combinations of DDT and parathion or, to a lesser degree, DDT and malathion, are more effective than DDT alone.—*D. W. Hamilton, USDA, Vincennes, Ind.*

WASHINGTON

Apple growers in Yakima Valley, Washington, are getting excellent results with DDT for controlling codling moth. Aided by cool summer weather during the last two seasons, they have brought control to the point where often we can find no wormy fruit at all—and this by using no more than three cover sprays. Examination of apples in a dozen orchards during these two years showed an average infestation of one-tenth of 1 per cent. The average recorded in some of the same orchards in 1951-52 was 4 per cent.

Motorists will be attracted to your roadside market—provided it is good-looking and well located. Working drawings for an attractive, easy-to-build stand are available for 50 cents from AMERICAN FRUIT GROWER, Willoughby, Ohio.

On the other hand, we have evidence that worms in a few areas may be harder to kill than elsewhere. Whether this resistance will increase, only time will tell.

There has been a tendency to expect too much of DDT. It is not a substitute for good timing or thorough work, at least not entirely. Timing has not always been watched carefully enough, and thoroughness is far more important than speed. With proper timing and thorough application most growers will get good control.—*E. J. Newcomer, USDA, Yakima, Wash.*

For further information on the use of chemicals for codling moth control, write American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N.Y., for parathion; E. I. duPont de Nemours & Co., Wilmington 98, Del., for EPN; Geigy Chemical Company, 89 Barclay St., New York 8, N.Y., for diazinon; and S. B. Penick & Co., 50 Church St., New York 8, N.Y., for ryania.

This 18x84-foot plastic greenhouse costs $250

A PLASTIC GREENHOUSE

A PLASTIC greenhouse developed by the University of Kentucky can open new outlets for the fruit grower who would like a profitable sideline in vegetables or flowers at low initial cost.

An 18x84-foot plastic greenhouse can be easily constructed for only $250. A glass house of the same size would cost from $4,000 to $5,000. Low-cost polyethylene film makes the difference.

What's more, several seasons of growing tomatoes, Kentucky Wonder beans, and several types of flowers have shown that the plants appeared better under plastic than under glass.

The construction is an easy job for any handyman. By using two layers of plastic, it is possible to reduce heating costs to about half that of glass. Because the plastic retains moisture so well, plants need not be watered so often. The plastic is slightly opaque, so that heat built up from direct sun is not so extreme. There is enough light, however, for plants to thrive.

Propane or butane bottled gas was found highly desirable for heating the plastic greenhouse. A $39.95 propane heater will keep an 18x84-foot lined plastic greenhouse at 40° when outside temperature is —5°. Heat is dispersed from the heater through a 3-inch downspout extending 50 to 60 feet in two directions.

The plastic film deteriorates under the high light intensities of summer, and should not be put on before October 1 in Kentucky. Normal winter weather conditions and wind won't affect it, but a steep 40° roof is recommended so snow will slide off.

The plastic goes into the ground on the sides, so no side walls are necessary. The polyethylene film was replaced each fall at an annual cost of $25, which is much less than upkeep costs of a glass house.

Working drawings of an inexpensive Plastic Greenhouse, prepared by the University of Kentucky, together with descriptive leaflet, may be obtained for 25 cents in coin or stamps from AMERICAN FRUIT GROWER, Willoughby, Ohio.

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The Model G Tractor, with engine in the rear, puts high labor costs behind you. It provides hand-hoe accuracy with the acre-covering ability of modern power equipment.

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One man becomes a crew. Your Model G operator can switch to many different power jobs with 26 low-cost, front-mounted Allis-Chalmers implements to choose from.

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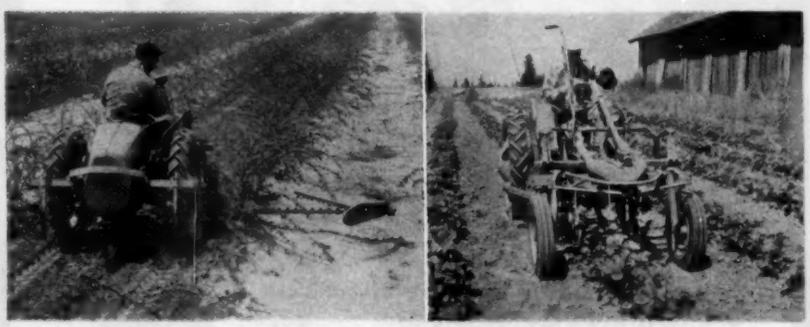

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DEALERS: Some territories are still open. Write for information.

FIRE BLIGHT *can be controlled*

Three-year experiment in Ohio proves value of antibiotics

By H. F. WINTER
Ohio Agricultural Experiment Station

EXPERIMENTS which started in Ohio in 1952 definitely prove that fire blight of apples and pears can now be successfully controlled.

Many different antibiotics were tested in the laboratory at the Ohio Agricultural Experiment Station during the winter and spring of 1952. Several of them proved to be very effective in preventing the growth of the fire blight bacterium in culture. The most promising antibiotics were next taken to the greenhouse where they were applied in various ways to growing Jonathan apple trees. After treatment the succulent twigs were inoculated with the fire blight organism. If no infection occurred, the treatment was considered to be effective.

The greenhouse experiments showed that the most practical and effective method of antibiotic application was by water sprays. They showed also that of the materials tested, streptomycin was the most effective in preventing fire blight on the very susceptible growing trees. Terramycin was moderately effective but higher concentrations of it were required to do the job.

Results of Tests in 1953

An orchard test of these antibiotics was made by the Ohio station in the spring of 1953. Since it was well known that most fire blight epidemics start at blossomtime through blossom infection, the entire program was based on preventing this initial spring phase of the disease.

Two "in bloom" sprays were, therefore, applied, one in early and one in full bloom, followed by a third spray at petal fall. Two dosages of each of the two antibiotics were tested, 60 and 120 parts per million. It should be pointed out that 120 p.p.m. of either antibiotic would be 1½ ounces of a pure material in 100 gallons of water.

Zineb at 2 pounds per 100 gallons of water was applied in a similar manner for comparison purposes, since it had been reported as giving the best control of fire blight of any of the previously used materials. Untreated trees were also left to serve as checks on the various treatments.

A wetting agent, Triton B-1956, was added in all sprays to insure thorough wetting and penetration of the

sprays into the susceptible blossoms. To insure a severe fire blight epidemic all trees were inoculated in full bloom by spraying them with a suspension of the fire blight bacteria.

Three weeks after the inoculation, blossom and twig blight was very abundant on the untreated trees and counts were made to determine the effectiveness of the various materials.

Control of Fire Blight in Ohio—1953

Material in 100 gals. water	Per cent Blossom cluster blight	Per cent Twig blight
Streptomycin 120 p.p.m.	2.0	0.0
Streptomycin 60 p.p.m.	7.8	0.5
Terramycin 120 p.p.m.	9.0	2.0
Terramycin 60 p.p.m.	20.6	5.2
Zineb 2 lbs.	44.0	9.8
Check—no treatment	83.1	20.6

Never before in a controlled test of this kind or under severe conditions of natural infection in a commercial orchard had such complete fire blight control been obtained. Streptomycin allowed only 2 per cent blossom blight as compared with 83 per cent in the checks and 44 per cent with zineb.

Extensive 1954 Experiments

Very extensive experiments carried out in Ohio in 1954 have now definitely shown that fire blight on both apples and pears can be effectively controlled by spraying with streptomycin. Streptomycin-containing sprays were applied during blossomtime in 15 commercial apple orchards in all parts of Ohio. In no case was there failure in fire blight control where streptomycin was applied at 100 p.p.m. twice in bloom and once at petal fall. Blossom and twig blight was very severe on the untreated check trees in many of these orchards.

Agri-mycin, which is an agricultural antibiotic preparation containing streptomycin and terramycin in a 10 to 1 ratio, controlled fire blight as well as streptomycin alone.

Fire blight control with streptomycin was excellent in two commercial pear orchards in Ohio in 1954. In one of these, six-year-old untreated Bartlett trees averaged 10 infections per tree, while the sprayed trees showed only an occasional blossom or twig infection. Many untreated trees were badly crippled or killed by mid-summer while sprayed trees remained nearly blight-free throughout the season.

Streptomycin and streptomycin-containing antibiotic materials were used experimentally in 1954 by workers in almost all regions of the United States where apples and pears are grown. In all of these tests which have been so far reported, the Ohio work has been corroborated. It is apparent that we have in our hands at long last an adequate control for one of our most vexing and costly fruit diseases. THE END

STOP
BROWN ROT
BLOSSOM
BLIGHT
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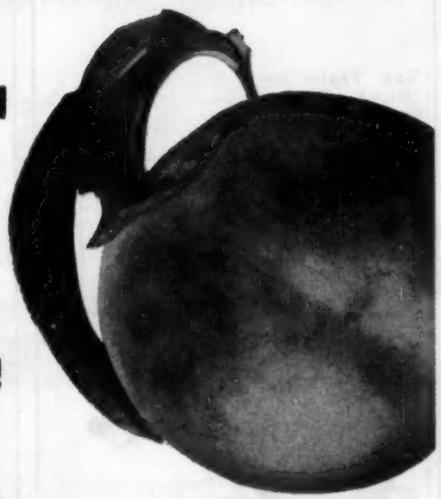
Fully approved
for control of
Brown Rot
Blossom Blight!



Extensive grower use and repeated Experiment Station tests conclusively prove that Phygon-XL does an outstanding job combatting deadly peach-destroying brown rot blossom blight.

With Phygon-XL's latest state approvals plus its recommended control of brown rot and peach leaf curl, you can expect an even finer peach crop this year—hence more peach profits. Simple to apply and highly compatible.

Phygon-XL also effectively controls apple scab and bitter rot of apples and peaches. In fact, it is the cheapest, most effective organic fungicide you can use.

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6. Be Forewarned of Unusual Weather

New Taylor registering "High-Low" thermometer helps predict frost by telling highest and lowest temperatures since last setting, plus temperature now. Tiny steel-cored indicators inside tube stay put till reset with magnet. Helps locate orchards by detecting cold zones. Warns when to start smudge pots. **$10**

Taylor Ship's Wheel Stormoguide helps foretell frost and local storms within next 12 to 24 hours. Much easier to use than an ordinary barometer because it gives detailed easy-to-read forecasts for each change in barometric pressure. Handsome walnut case, solid brass spokes, Stormoguide dial and exclusive altitude adjustment. **$13.50**

Taylor Sling Psychrometer. The scientific instrument weather bureaus use to tell relative humidity. Complete with swivel handle, wet and dry bulb thermometers and protective copper case. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. (Prices slightly higher in Canada.)

$9.00

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

Cracking Nuts The Easy Way

THE Styers of Salem, Oregon are cracking nuts mechanically this winter, thanks to the inventive ability of John E. Styers.

Styers, retired mechanical research worker of the Lincoln Mercury plant of the Ford Motor Company in Michigan, moved out West to be with some of his family.

Styers' son-in-law grows nuts and last winter the family spent every spare minute cracking them, by hand. That spurred Styers to see what he could do along mechanical lines to speed up the cracking process.

A reduction gear from his neighbor's junk pile, a discarded washing machine agitator, and a one-fourth horsepower washing machine motor are the main parts of the nut cracker invented by Styers. The agitator serves as a breaking wheel.

From the hopper at the top of the trough to the bottom the nuts are carried against the breaking surface by wire mesh. Gradually the shells and nuts are separated. A cast-iron wheel at the end of the trough takes care of any remaining uncracked shells.

The machine is not primarily designed to remove nut meats in halves; however, if halves are desired the cast-iron wheel is disconnected and the final "crush" is not given. In either case the nut meats are readily separated from the shells.

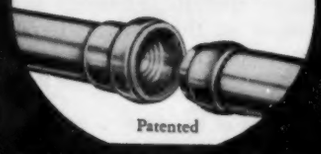
Cracking Cost Is Small

The machine can crack English walnuts at a cost of about one-half cent a pound, a small fraction of the present hand-cracking cost. It works just as efficiently on all types of nuts with the possible exception of the hard-shelled black walnuts, which Styers has not yet tried.

Styers believes his machine can be manufactured at a price within the range of the small-scale grower.—*Harold and Lillie Larsen.*

John E. Styers and his nut-cracking machine.

Specify AMES



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By Reid M. Brooks and H. P. Olmo

Briefly describes 1,106 varieties originating in North America and introduced commercially during the last 30 years. Variety name with synonyms, originator's name and address, date of commercial introduction, plant patent number, parentage, and most valuable characteristics of the variety are included. 206 pages. $3.00

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A complete description of the selection, planting and cultivation of dwarf fruit trees. **$2.50**

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By Reid M. Brooks and Claron O. Hesse

A handbook for the home gardener on fruit varieties; climatic adaptations; soil, water, and nutrient requirements; pruning and propagation; control of diseases and pests. $4.50

THE FUNDAMENTALS OF FRUIT PRODUCTION

New Third Edition

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This new third edition brings up-to-date the latest findings in modern fruit production. Two new sections of vital importance to plant culture today have been included—Light Relations and Growth Regulators. $9.00

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AMERICAN FRUIT GROWER

Willoughby, Ohio

QUALITY *of* APPLES

as affected by sprays

By PHILIP GARMAN

The Connecticut Agricultural Experiment Station

THE questions often arise in fruit pest control: What are we doing, if anything, to the tree and to the fruit itself? Are spray combinations having one common ingredient always the same? Is fruit grading U.S. Fancy of better eating quality than fruit not so fancy, that is, with a few curculio scars or scab spots?

From experience at the Connecticut Agricultural Experiment Station these questions cannot be answered in the affirmative. Our results the last two or three years indicate, however, that some combinations of sprays are better than others. They indicate that any spray, the ingredients of which show even slight incompatibility or any tendency to injure foliage, will be reflected either in taste panel preference for the combinations that do not injure or in various kinds of "off-flavor" in the ones that do.

These results have been consistent from year to year. One of our 1953 combinations, for example, showing the best insect and disease control, was at the bottom of the lot as regards taste-panel acceptance. Slight leaf injury was noticed in the randomized plots wherever this combination was applied.

Influence of Weather

But can we expect injury from a given combination every year? In view of the wide variety of climate it would appear that the answer would be *no*. This is particularly true of the sulfurs where low temperatures or heavy rains that wash them off may be expected to reduce injury. The same probably holds true for arsenate of lead. We have witnessed excellent results in the same year and locality in one orchard where arsenate of lead was applied only in cool, dry periods, while in others severe russeting occurred from applications in warm, damp periods. Also, the recent use of captan with lead arsenate seems to have reduced somewhat the danger from injury over that experienced with combinations formerly used.

Following up the injury theory, it would seem almost self-evident that severe insect or disease injury would produce the same result. We believe that it often does. Our check trees in

(*Continued on page* 42)

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200 Gallon Stainless-Steel Tank

Total Weight Less Than One Ton

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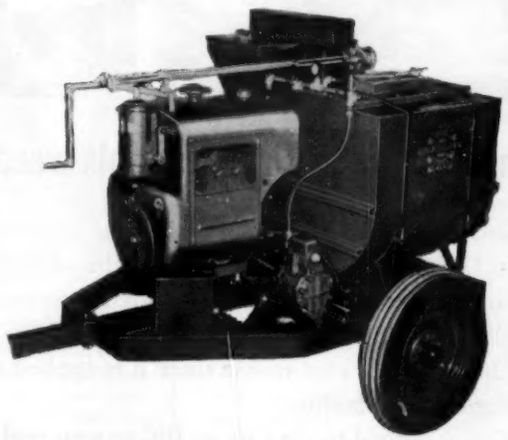

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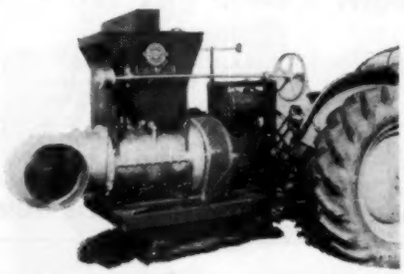

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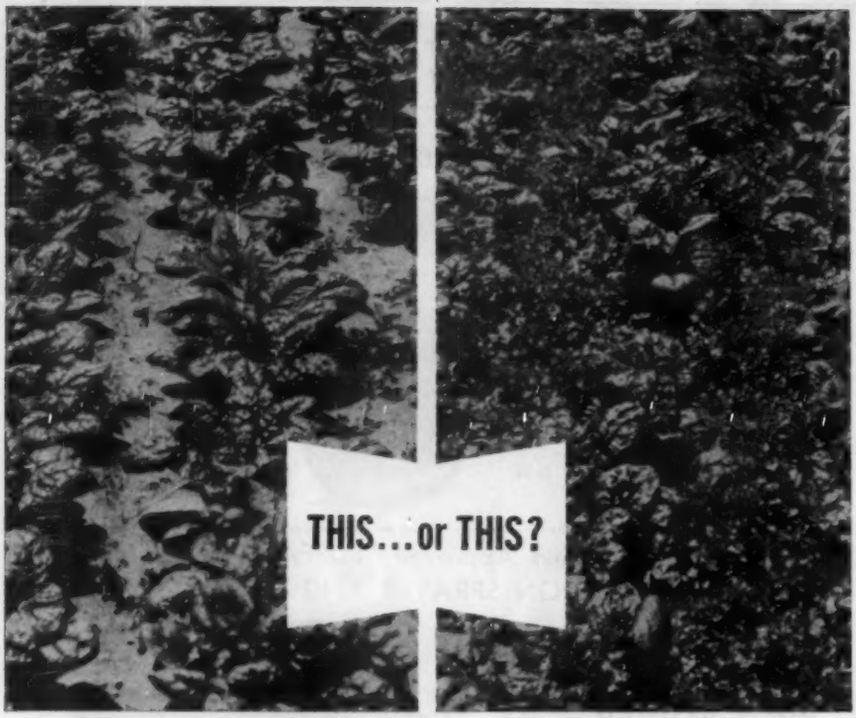

Chloro-IPC effectively controls weeds in leafy crops

The increased profits made possible to growers through their use of Chloro-IPC on leafy crop plantings is almost unbelievable.

Growers have reported returns of up to ten times their investment cost to apply Chloro-IPC.

Chloro-IPC is easy to use since it is applied at the same time as seed planting or transplanting.

You are urged to use Chloro-IPC in your trial plantings of leafy crops. Chloro-IPC's effective weed control means maximum crop yield, improved quality, savings in the cost of hand-weeding, and relief from labor shortages.

For complete information and suggested dosages, contact the pesticide manufacturer located nearest you.

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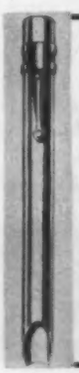

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QUALITY OF APPLES

(*Continued from page* 41)

1953 with no spray were of very low quality, largely because of severe leaf injury by insects and disease.

Our taste panels have apparently been able to distinguish even small differences in both acids and sugars. Consequently, any operation that increases these vital elements may be expected to improve quality. It has been our experience, however, that apples with high sugars, one of which has low acid, the other high, have different rates of preference in favor of the high acid.

Minerals of themselves seem to have affected our panels very little, though it would appear that certain ones such as boron through its effect on sugar is very important to maintain in apple tree nutrition. Lead arsenate has shown a consistent tendency to depress that mineral, so that efforts to maintain a satisfactory level would seem desirable wherever it is used.

Following our theory that leaf injury generally affects quality, it would also follow that mineral deficiencies that produce lesions in the leaves would be as undesirable as harmful pesticides.

Color

Color is an important item in apple growing, as every grower knows. Besides the effects on color of fertilizer, cool nights, and high-colored strains or varieties, we often see adverse results on color from both insecticides and fungicides. Certain combinations of lead arsenate reduce color, and black materials used too late in the year may produce a blotchy apple. Light-colored sprays, therefore, are better. The exception is sulfur which may bleach the color if used too freely in late season. Also, the extensive use of phenyl mercuries, which delay ripening, has been known to produce green fruit at harvest. THE END

HANDY ANDY

Sharpening mower sickles on the Charles L. Hempfling farm is a quick and easy job now that he has installed this Lantz sickle grinder. Hempfling does a lot of mowing in his orchards at Taylorsport, Ky. With the help of the grinder, he can sharpen a sickle in about half the time that the job formerly took, and do a better job.

The sickle is held in place on the bench stand, and the emery wheel is moved back and forth to sharpen the sickle edges, as shown. Adjustments can be made to fit any sickle or different-sized sections. The Lantz sickle grinder is manufactured at Valparaiso, Ind.—*Elden S. Banta.*

STATE NEWS

(*Continued from page 25*)

the same time building a 20,000-bushel cold storage on the pay-as-you-go policy. One reason for the pay plan was that "the bank would not lend on a college education." Now production from the young orchards fills the storage, and the trees are just coming into full bearing.

Officers elected were: William D. Ravenscroft, Bantam, president; Wilbur H. Marshman, West Simsbury, vice-president; Sherman P. Hollister, Storrs, secretary; and Nelson B. Cooke, Branford, treasurer.—*S. P. Hollister.*

Mulch Those Plants

VERMONT—If you have not already done so, you had better apply mulch to those strawberry plants, advises C. E. Blasberg, extension horticulturist. Strawberry crowns are severely injured by low temperatures as well as by sudden drops in temperature and a snow cover or artificial mulch serves to reduce the danger of injury from these causes. Also, on the heavier soil types, the mulch may help to prevent frost heaving.

Mulching materials include pine needles, swale or marsh hay, straw, or sawdust. Pine boughs will hold the sawdust in place. When growth starts in the spring some of the mulch must be removed to give the plants a chance to grow. Plants which have had a winter mulch usually ripen their fruits a few days later than unmulched plants, Blasberg states.

STORAGE EXPERT DIES

Dr. Mark H. Haller, 57, senior horticulturist of the USDA, died December 1 at Bethesda, Md., on the day he was to have retired for physical disability.

Dr. Haller had specialized in the transportation and storage of fruits and vegetables during his 31 years in government service. He was an authority on storage, especially of peaches and apples. He had done much research on the respiration of fruit, the chemical changes that take place in storage, and the best temperatures for storing.

His work also included the effective application of pressure testers for determining the best time to pick peaches, pears, and apples.

First Meeting

NORTH CAROLINA—The first annual meeting of the North Carolina State Apple Growers Association, which was held January 6-7 in Asheville, was a big success. Sixteen counties were represented and out-of-state speakers as well as State College authorities helped to make the program an especially helpful one. Out-of-state speakers included Dr. J. R. Magness, principal horticulturist, USDA, Beltsville, Md.; Truman Nold, executive secretary, National Apple Institute, Washington, D.C.; and W. W. Hunt, production manager, National Fruit Products, Inc., Winchester, Va.

Officers elected were: William Dalton, Hendersonville, president; R. N. Barber, Waynesville, vice-president; and Boyd C. Campbell, Taylorsville, secretary-treasurer.—*Boyd C. Campbell.*

New Black Raspberry

IOWA—After 27 years of careful testing, plants of the new black raspberry variety developed by Iowa State College and called Black Hawk will be available this spring to raspberry growers in midwestern states, to which area the new variety is adapted. More than 100,000

(*Continued on page 44*)

Again and Again Owners Report

BETTER COVERAGE— CLEANER CROPS

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The Sprayer That Owners Endorse

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Spray material is always thoroughly mixed—never too "strong" or too "weak."

3. HIGH PRESSURE PUMP
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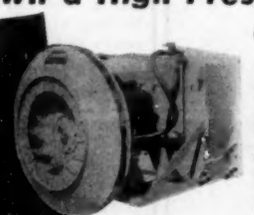

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STATE NEWS

(*Continued from page* 43)

plants will be available only through nurseries. Fruits of the new variety, which ripen midseason to late, rate excellent in flavor and quality, in fresh or processed form. Black Hawk plants are less seriously affected by anthracnose than other varieties.—*Glenn Raines, Sec'y, Des Moines.*

Discussions on Sprays

NEW JERSEY—Fruit growers from every section of the state gathered in Atlantic City on December 6-8 for the 80th annual meeting of the New Jersey State Horticultural Society. Insect and disease control in peach and apple orchards came in for a large share of discussion.

Dr. Robert H. Daines discussed spray schedules for both apples and peaches and pointed up some problems on fruit finish as affected by fungicides and other chemicals. He suggested the use of captan, a fungicide developed at the New Jersey Experiment Station, for both apples and peaches. On apples it has controlled scab even when applied 18 hours after the beginning of an infection period. In the peach spray program he suggested the use of ferbam in early sprays and captan in later ones, especially where peach canker is prevalent.

Dr. R. M. Smock, noted storage specialist of Cornell University, reviewed the pre-storage factors and conditions that affect the keeping quality of apples. He pointed out that climate, the spray schedule, fertilization, pruning and thinning practices all contribute to the length of time an apple can be stored.

Dr. A. M. Musser, of South Carolina Experiment Station, reviewed the progress in peach production in the South over the past 20 years. He pointed out that varieties other than Elberta are now being planted in the South Carolina area. Sunhigh is one of the best quality and high-yielding new varieties.

Dr. Loren D. Tukey, of Pennsylvania State University's horticulture department, explained how peaches can be chemically thinned, precooled, and stored. So far chloro IPC has been the only chemical that has thinned peaches effectively. Its effectiveness varies according to tree vigor, weather, etc. For trial purposes only, he suggested using the chemical at from 150 to 300 parts per million about 30 days after full bloom.

Dr. Donald C. Zeiger of Rutgers University summarized the work he has been doing on the relation of fertilization to irrigation in New Jersey orchards. His report, still inconclusive, suggested that definite rates of fertilization will have to be made where irrigation is regularly practiced.—*E. S. Banta.*

Crop Prospects

VIRGINIA—Apple growers in the southern and southwestern sections of the state report better fruit bud formation for 1955 than do growers in northern Virginia where the 1954 set was exceptionally heavy. In the Piedmont area apple crop prospects are difficult to estimate because of heavy loss of trees due to Hurricane Hazel and severe drought in the spring and summer of 1954.

A program designed to improve the marketing of Virginia agricultural products, sponsored by the agricultural committee of the Virginia State Chamber of Commerce, is underway. Products that make high-grade standards and have been properly inspected are eligible to use a special label. J. Kenneth Robinson, president of Virginia State Horticultural Society, is chairman of the committee.—*John F. Watson, Sec'y, Staunton.*

PIONEER BLUEBERRY GROWER DIES

Miss Elizabeth C. White, known as New Jersey's "blueberry queen" for her part in developing the cultivated blueberry industry, is dead. The pioneer blueberry grower was 83 years old.

The eldest daughter of Joseph C. White, a pioneer cranberry grower of the 1890's, she began helping her father in his bogs in 1893, and operated his huge cranberry farm for some years before and after his death in 1925.

In 1910 she began looking for a crop to supplement an off-cranberry season. She hit upon blueberries, a crop which is now a multi-million dollar industry. She was awarded the Wilder Medal of the American Pomological Society, and was the first woman member of the American Cranberry Growers' Association.

In recent years, Miss White turned her major interest to the cultivation of native holly and succeeded in developing a plant which rivaled the best stocks imported from England.

Her farm is now operated by Thomas Darlington, her nephew.

Good Season

WISCONSIN—Fruit growers generally enjoyed a profitable season in 1954. Demand was excellent, prices were good, although the crop was slightly smaller than normal. Many commercial growers sold out during the harvest season. Much credit for the excellent demand for apples is given to the promotion carried on by the Wisconsin Apple Institute. At the recent annual meeting of the institute members voted unanimously to ask all growers to contribute an additional half cent per bushel on the past year's fresh fruit crop.—*H. J. Rahmlow, Sec'y, Madison.*

Varied Program

MICHIGAN—More than 3,000 fruit growers from Michigan and surrounding states attended the 84th annual meeting of the Michigan State Horticultural Society at Grand Rapids.

The program emphasized promotion and production problems. H. F. Patterson, secretary-manager of the Michigan State Apple Commission, pointed out that in the supermarket apples have to be their own salesmen and that this had increased the need for new merchandising techniques and sales aids to create a desire for apples by the housewife. This method of advertising, he explained, was expensive but necessary to move Michigan apples.

Prof. John C. Doneth, agricultural economist, Michigan State College, presented an analysis of 27 fruit farms. He showed that those making the most money also had the highest equipment costs because of the purchase of laborsaving machinery, which drastically reduced hand labor costs.

Sam Dillon, Dillon Orchards, Hancock, Md., gave an excellent discussion on correlating daily problems and the need for fruit growers to adapt production practices to changing conditions. He also pointed out the need of the fruit industry to do a better job of selling its products so that the consumer will be anxious to include more apples, peaches, and cherries in his daily living.

A panel discussion on protecting strawberries from frost with irrigation played an important role in the small fruit program. Growers Howard Clupper, of Dowagiac; E. C. Baiers, of Watervliet; Roy Bisnett, of Decatur; and Jack Ash-

man, of Benton Harbor, related their success in using irrigation for frost control.

A second growers' panel, conducted by E. J. Robinette, a peach grower in the Grand Rapids area, dealt with different methods of peach thinning. James Friday of Coloma stated that his success using DN No. 1 stems from proper timing and wetting the trees thoroughly. He stated also that many growers wait too late to make the thinning application as many flowers are pollinated before the blossoms are fully expanded. Robert Anderson, of Covert, has found that Elgetol 318 and Dow 289 are satisfactory for chemical peach thinning at the time of bloom. However, he did say that each grower has to develop his own program based on his own experiences.

In contrast to chemical thinning, Harry Nye of St. Joseph explained his method of blossom thinning by hand, using a wire "back scratcher." This is done most efficiently, he stated, when the buds are in the balloon stage, at which time one-half to two-thirds of the bloom is removed. One man thins a well-pruned tree in two to four minutes, he continued, and it takes very little thinning in June.

Newly elected officers for 1955 were: President, Robert Anderson, Covert; first vice-president, Donald Barden, South Haven; second vice-president, Morris Helsel, Kent City; treasurer, Lloyd Spencer, Pullman; secretary, H. D. Hootman, East Lansing; assistant secretary, Arthur E. Mitchell, East Lansing.

An important part of the three-day meetings were the 87 commercial exhibits.—*A. E. Mitchell.*

Growers Learn About Bees

MARYLAND—With fair to good weather and top attendance, the annual fruit growers' conference under the auspices of the Maryland State Horticultural Society and the University of Maryland extension service was held in Hagerstown on January 5-6.

The speakers urged better co-operation between growers in putting up a real product and in promoting better sales in fresh markets. Chemical thinning of apples was brought up-to-date regarding certain differences in variety response, and peach thinning with CIPC was suggested, following experimental results. Hand-thinning following chemicals was not good since too many fruits were removed.

Discussion of new styles in apple varieties in the East and West brought out the fact that there are some promising ones of Delicious and Stayman, many of which were on display.

One speaker stated that the trends in peach varieties were tending to change in southern and middle eastern states, to cut some overlapping of ripening times. More consumers were needed, as the speaker figured that people eat peaches only for a limited time and then consumption drops.

Good irrigation was considered to be that in which the soil was not allowed to become too dry between applications. Also, night irrigation was the best, but not too easy, due to pipe-changing in the dark. Overhead sprinklers threw water farther and did not seem to increase disease.

In an excellent description of bee habits as they affect the pollination of fruits, it was brought out that beekeepers and growers can live in mutual harmony and have better crops if they understand the problems involved and work together.

W. C. Main was re-elected president and A. F. Vierheller, secretary-treasurer, for the coming year.—*A. F. Vierheller.*

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Commercial Growers all over the country praise **Puratized Agricultural Spray** — wouldn't be without it. They know how **it stops scab,** right after infection, even before you can see it. You, too, can protect your apples against dollar losses from apple scab, and **get rid of it fast,** with this **easy-to-use, economical** fungicide. To you it means a bigger and better crop, fancier apples.

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ALL-PURPOSE SPRAY

One spray for all fruits is now available for amateurs

By C. R. CUTRIGHT
Ohio Agricultural Experiment Station

PEACHES, plums, sweet and sour cherries, pears, quince, red raspberries, blackberries, and grapes can now be sprayed with the same spray mixture. Four to five applications of this mixture per year should be sufficient to produce fruit relatively free from insect and disease attack. Apples may also be sprayed with the same formula but several more spray applications are needed during the growing season. In general, apples are not advised for a planting that is to be sprayed with an all-purpose formula.

This spray formula which was developed at the Ohio Agricultural Experiment Station and which is recommended as safe and effective is as follows:

Materials	Amounts Used Per 100 Gals.	10 Gals.
Methoxychlor (Marlate) 50% WP	2½ lbs.	4 ozs.
Malathion 25% WP	3 lbs.	5 ozs.
Captan or Ferbam	2 lbs.	3 ozs.

The advantages of having only one spray mixture that can be used on all fruits is very evident. First, the number of ingredients is only three as contrasted with the many materials that must be on hand if each fruit is sprayed separately. In fact, the three materials combined in proper proportions can now be purchased in a single package. Second, all fruits can be sprayed at the same times, thus using labor much more efficiently. However, it should be definitely understood that a formula such as this, used a limited number of times, will not produce fruit as uniformly free of insect and disease injury as that pro-

Foliage must be thoroughly covered with spray.

duced by commercial fruit growers.

Timing the sprays. As soon as the petals have fallen from sour cherry or late blooming peaches, make the first spray application. Repeat in 10 days and following this, spray at intervals of two weeks until at least four applications are made. *Do not spray fruits when they are in bloom.*

Safety. The materials used in this formula are among the safest but are still poisons. Handle them as such.

Equipment. The sprays may be put on with any power sprayer large or small, or if you have more time, with hand sprayers. Be sure to cover all fruits and foliage with the spray.

Special note. Methoxychlor is a necessary part of the formula for the first two sprays. After these it may be omitted if desired.

Questions on all-purpose sprays will be gladly answered by the Department of Entomology, Ohio Agricultural Experiment Station, Wooster, Ohio. THE END

If your local dealer does not stock All-Purpose spray, write Farm Bureau Co-operative Assn., Inc., Columbus 16, Ohio, formulators.

CALCULATING PPM

HERE is a short-cut for calculating ppm (parts per million) of the several growth-regulating materials now in use. It is not accurate for research purposes but is good enough for commercial applications. Proprietary formulations often differ in the amounts to use in 100 gallons of water and you must follow the directions.

Variations, however, can be calculated in this way: For example, if the formulation contains 3.25 per cent active ingredient (as marked on the label) and you wish to make a spray solution of 20 ppm, then multiply the number 1.3 by 20 ppm which equals 26. Divide this product by 3.25 per cent which equals 8. Use 8 ounces of the formulation (liquid or dry measures cause insignificant differences) in 100 gallons to have a dilution of 20 ppm.

Other figures for ppm or per cent active ingredient can be substituted in the above calculation. The number 1.3 is used in all such calculations.—*L. D. Tukey, Pennsylvania State University.*

MOBILE MIXER

A FERTILIZER mixing plant on wheels may be cheaper than buying specially-mixed fertilizers. Designed by engineers of the Southern States Co-operative, Richmond, Va., the "Gandy Spreader" has three separate 10-foot hoppers on one wheel base. Put nitrogen in one, phosphorus in the second, and potassium in the third. The materials can be applied in the desired proportions.

ELGETOL! The product preferred by leading growers! **ELGETOL!** It has consistently, year in and year out, proved itself in performance. Remember! More fancy fruit commands more fancy prices!

ELGETOL controls: aphids, bud moth, or oyster shell scale on apples; aphids on prunes and plums, and cherry aphid and case bearer.

ELGETOL 318 controls: red mite on apples, prunes, and plums, in addition to the pests mentioned above.

ELGETOL ORCHARD FLOOR SPRAY CONTROLS APPLE SCAB! A late dormant ground application of **ELGETOL**, followed by the use of one of the Mercurials in later sprays, has given outstanding control of apple scab. Some remarkable results have been obtained by progressive growers. Send now for instructive booklet!

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ELGETOL controls:
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ELGETOL 318 controls:
Aphis Scale, Red Mite, Bud Moth — ON: Apples, Cherries, Plums, Cane Fruits

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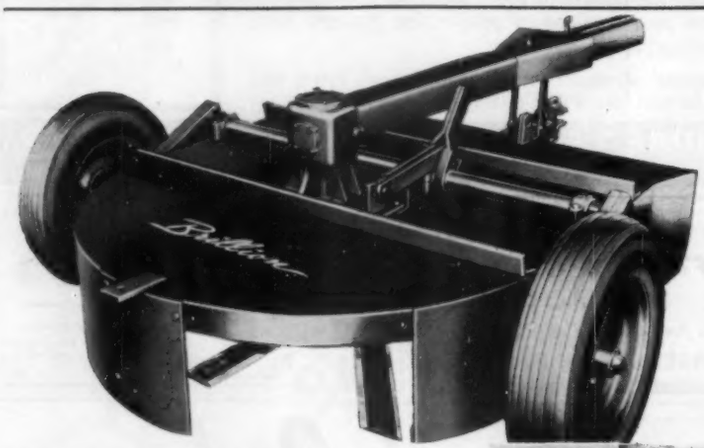

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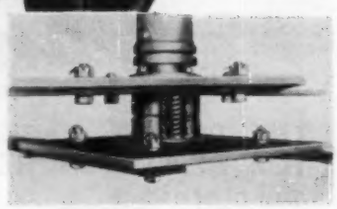

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INSECT CONTROL

(*Continued from page* 18)

important fruit pests, such as certain kinds of mites with relation to parathion, and several kinds of leafhoppers to DDT. Fortunately, the large numbers of insecticides now available permit the grower to meet the problems of resistance to insecticides much more readily than he could when lead arsenate, and cryolite in the Northwest, were virtually the only insecticides available for worm control.

The Use of Systemics

Among the newer types of insecticide materials, the so-called systemics are gradually finding a limited place in the orchard insect control program. Systemic action on the part of an insecticide means absorption into the tree, and more or less movement in the sap to other parts of the tree. The sap then becomes poisonous to insects, which may be killed, even though they may never have been in contact with the insecticide on the outside of the leaves or fruit. Of course, many systemics also have the same effect as ordinary insecticides, killing either by direct contact at the time the spraying is done, or by the deposits left on the surface of fruit or leaves.

Most of the systemics that have been studied thus far have been the most effective against insects that feed chiefly on sap, especially plant lice and mites. However, some of the newer systemic materials now under study also affect chewing insects. Progress with systemics is bound to be slow because of difficulty in determining just what happens to the compound after it has been absorbed by the plant. If the plant juices thus become poisonous to the insect, the possible hazard to the human consumer must be carefully evaluated. Fortunately, with some of these materials, the effect lasts only a few weeks.

With the announcement last fall of proposed spray residue tolerances that will shortly become effective, growers may well wonder what changes, if any, should be made in their spray programs. Fortunately, schedules now followed in a majority of apple orchards leave residues well under the proposed tolerances. In some orchards in the eastern half of the country, some modifications may be needed. It may be necessary, for instance, to substitute another insecticide for DDT in the later applications. In many orchards it may be possible to concentrate more of the spray program against the first brood

(*Continued on page* 58)

New Ideas and Sprays for Control of

LEAF SPOT

By F. H. LEWIS
Fruit Research Laboratory
Arendsville, Pa.

CHERRY leaf spot in southern Pennsylvania orchards has varied from a destructive plague that threatened to wipe out the cherry industry down to where the disease has been difficult to find in any sprayed orchard.

Cherry leaf spot infections can be reduced by 1) cultivation or spraying the old leaves on the ground, and 2) by the application of fungicidal sprays to the tree.

Ground Control

We have obtained significant reductions in spring leaf-spot infections by cultivating not later than full bloom. We obtained a 50 per cent reduction in early leaf-spot infections in 1947 merely by disking both ways along the tree row. Most of the old leaves were in that area.

Where cultivation has been undesirable because of steepness of terrain or erosion, some growers have sprayed the orchard floor with the sodium salt of dinitro-o-cresol (sold as Elgetol and Krenite), used at 2 quarts paste in 100 gallons water and applied at the rate of 500 gallons per acre.

The time when the first fungicidal spray is needed on the tree for leaf-spot control normally occurs about the time the flower petals fall, and most spray schedules call for the first application then. However, a large number of infections may occur before petal fall if the petals are slow in falling, leaf growth is rapid in late bloom, and the fungus is present in most of the old leaves on the ground.

For example, in one of our tests, trees sprayed in both pink and petal fall had 1.5 per cent leaf spot, while those sprayed only in petal fall had about 25 per cent leaf spot. Experiences like this have caused us to recommend the first leaf-spot spray as the first of the flowers open.

Spray Schedule

As materials for disease control on sour cherries in 1955, the Pennsylvania Extension Service will recommend Bordeaux mixture at 1½-3-100 in the pink spray, will offer it as an alternate in the petal-fall spray, and recommend it at 2-6-100 in the post-harvest spray for leaf-spot and powdery-mildew control.

Ferbam at 2 pounds or glyodin at 1¼ quarts plus 2 ounces of lime will

(*Continued on page* 50)

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The Hardie Exclusive 2-fan assembly consists of 2 axial flow fans mounted with opposed blades on a single shaft scientifically spaced, balanced and with specially designed baffles in the fan housing.
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Model DF-26A. 2, 26 in. axial fans. Ford V-8 Industrial Engine, 140 H.P. at 2600 R.P.M.
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2. Gives better finish

Though "Fermate" is tough on diseases, a *straight* "Fermate" program is fine for finish of red varieties such as Red Delicious, Wealthy, Rome, McIntosh, York, Cortland, Winesap, Northern Spies and others.

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The long-use history of "Fermate" has proved its beneficial effect on general orchard vigor by consistently higher yields over a period of years.

4. Has low use cost

Experiment-station records show "Fermate" gives you more for your money because it gives higher yields of high-quality fruit.

On all chemicals always follow directions for application. Where caution or warning statements on use of product appear, read them carefully.

For free illustrated booklet on how "Fermate" can help you profit more from your orchard, write Du Pont, Grasselli Chemicals Dept., Room D-4032, Wilmington, Del. In Canada—Du Pont Company of Canada, Limited, Box 660, Montreal, Canada.

DU PONT REG. U. S. PAT. OFF. **Fermate®** FUNGICIDE

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

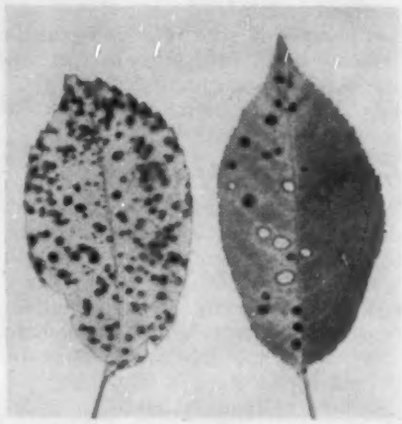
LEAF SPOT

(*Continued from page* 49)

be suggested for use in the petal-fall, shuck-split, and first-cover sprays for leaf-spot control.

These will be followed by two sprays in June of 70 per cent sulfur paste at 5 pounds plus ferbam at 1 pound for the control of leaf spot, powdery mildew, and the fruit rots caused by Sclerotinia, Glomerella, Alternaria, and Botrytis.

Instead of these materials, growers in northwestern Pennsylvania



Leaves showing injury caused by cherry leaf spot.

may use some of the proprietary copper compounds at a half to three-quarters pound of actual copper with 3 pounds of hydrated spray lime in 100 gallons of water.

On sweet cherries, captan at 2 pounds will be used in some cases while other growers will use sulfur paste or ferbam.

We have had leaf injury from lime sulfur wherever it has been used. It has often failed to give good leaf-spot control, and has dwarfed the fruit in nearly every case. Applied at weekly intervals in an effort to control a severe outbreak of leaf spot, it has reduced fruit size by as much as 17 per cent. It killed up to 80 per cent of the petals in some orchards in 1949.

The copper materials seem to be more injurious in southern Pennsylvania than they are along the Great Lakes. Bordeaux mixture has dwarfed the fruit too much to be used between petal fall and harvest. The least injurious of the proprietary copper compounds have averaged about 80 per cent leaf retention and 8 to 10 per cent fruit dwarfing.

Results with Ferbam

Ferbam at 2 pounds has given excellent results where the sprays were started in pink before any leaf-spot infections occurred and were applied at the intervals required to keep the new foliage covered. It has given

poor results at 1½ pounds where the sprays were started at petal fall and applied at intervals required in a 4- or 5-spray schedule.

We have no evidence that the material has any effect on solids content or canning quality other than that brought about by the twin effects of vigorous trees and the elimination of the effects of copper. Ferbam-sprayed fruit often has been lower in solids than copper-sprayed fruit, but this appears to be due to a return to normal, healthy trees and fruit rather than any injurious effect of the ferbam.

The Effect of Glyodin

Glyodin has given excellent leaf-spot control when used at about two-thirds pound of active ingredient. It has been one of the best materials for use in the sprays up to about one month before harvest. However, when used in all preharvest sprays, the fruit has been light in color, comparatively low in soluble solids, and comparatively susceptible to limb rubbing, cracking, and bleeding when picked.

Other workers have had considerable success in reducing the effects of glyodin on the fruit when used in all preharvest sprays by reducing the concentration to a half pound or less of active ingredient. It is not effective in the control of Alternaria fruit rot, and its effectiveness on bitter rot is questionable. Glyodin, like ferbam and captan, is not effective in powdery mildew control.

Captan for Light Infections

We are using some captan at 2 pounds, primarily in two preharvest sprays in June for leaf spot and fruit rot control. The major object has been to avoid the heavy spray deposit caused by the sulfur and ferbam normally used at that time and to avoid ferbam skin irritation to fruit pickers. Captan apparently is less effective in leaf-spot control than glyodin or ferbam but it has been adequate for light leaf spot outbreaks. It has been effective in fruit rot control but has not had a severe test. Fruit size and quality have been good. Powdery mildew has become a problem in some orchards where the sulfur-ferbam normally used in June has been replaced by captan for 2 years.

Actidione as an Eradicant

Recent tests with the antibiotic fungicide actidione indicate that it may be a very useful material for killing out leaf spot already present in the orchard and for use late in the season in areas where leaf spot is the only disease problem. Work in Michigan and New York indicates that actidione at 1 to 2 parts per million of water is an effective eradicant, both in killing out visible lesions and in preventing development of the lesions when applied soon after an infection period. It also seems to be an effective protective fungicide. However, it has caused injury to the fruit and foliage when used on immature fruit and leaves. It is of considerable interest as the first effective leaf-spot eradicant. THE END

Fruit farm cold storage is the answer to many marketing problems. Plans for the simple modern combination cold storage and packing house illustrated here are available from AMERICAN FRUIT

GROWER, Willoughby, Ohio, for $1.00. Complete working drawings are included. The storage can be built for 10,000-bushel capacity and later increased to 20,000. A gable roof can be substituted where snow is a problem.

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W. L. HAMILTON & CO.

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DISEASE CONTROL

(*Continued from page* 23)

of organic mercury and any one of the other organic fungicides, with both materials at half their normal dosage rate. This type of spray combines the eradicative action of the organic mercury spray with the protective action of the other component. The scab control obtained with the mixture is superior to that obtained with either component alone.

One such combination, organic mercury and glyodin (Crag 341), has given excellent scab control during the past several years. Where cedar apple rust is a problem, it is necessary to add 8 ounces of ferbam to the mixture during the critical infection period as neither mercury nor glyodin is efficient for the control of this rust fungus. Mercury should not be used after petal fall, as there is no tolerance for mercury on fruit.

Of the materials currently in use for the cover sprays, captan (Orthocide 406 and Captan 50 W) at the rate of 2 pounds in 100 gallons of water has the least harmful effect upon the finish of the fruit. It is particularly valuable for use on the Golden Delicious and Red Delicious varieties. Experiments during the past two years, however, indicate that a full-season schedule of captan may cause russet on Golden Delicious fruit and spotting and yellowing of Red Delicious leaves.

Apple Mildew—This disease is becoming more prevalent in eastern orchards of the Jonathan, Rome, and Cortland varieties. The various forms of sulfur will hold the disease in check, but sulfur is open to objection because of its effect on leaves, fruit, and shoot growth. Karathane, an organic material, reduces the amount of mildew and does not cause the injury that so frequently accompanies the use of sulfur. Neither sulfur nor Karathane eradicates the mildew fungus, and numerous other materials are being investigated in the search for a really effective material to control this disease.

Dichlone (Phygon) is an effective material that may be used for scab control in sections along the Canadian border, where the summer temperatures are not too high. In New York state and areas to the south, dichlone cannot be used successfully on apples as it causes excessive russeting of the fruit and serious leaf spotting, and it has a marked effect upon the size of the crop the following year.

The various organic spray compounds and combinations that have been described are for use where the grower is interested in producing the

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highest quality fruit for the fresh-fruit market. Apples grown for processing do not require these more expensive treatments, since finish is not of paramount importance, and they may be sprayed with a mixture of sulfur and ferbam during the blossom period and with Bordeaux mixture in the cover sprays.

Peach Sprays—New materials and new combinations for use on stone fruits are not as numerous as those available for use on apples. Recent results have shown, however, that the combination of a half pound of dichlone with 3 pounds of wettable sulfur results in an excellent spray mixture for blossom-blight control on peaches. The addition of the dichlone adds materially to the effectiveness of the mixture. This mixture will be tested during 1955 on sweet and sour cherries in areas where brown rot is troublesome.

The peach grower is no longer dependent upon liquid lime-sulfur solution or on Bordeaux mixture for leaf-curl control. The various dinitro sprays have been found to be very effective and ferbam applied at the rate of 1½ pounds in 100 gallons has given excellent control when applied in fall or early spring. Any material used for leaf-curl control in the spring *must* be applied before the buds start to swell.

Some peach growers have used captan (2 pounds to 100 gallons of water) instead of sulfur as a summer spray for peaches. It is reported that this material gives good control of brown rot and enhances the appearance of the fruit. Captan, however, caused leaf injury on some varieties of peaches.

Reports from Massachusetts indicate that captan is an effective control for the form of peach canker, or constriction disease, occurring in that state. Fixed coppers (three fourths pound of actual copper in 100 gallons), ferbam (1½ pounds in 100 gallons), and glyodin (1½ pints in 100 gallons) are superior to lime-sulfur solution or sulfur paste for cherry leaf-spot control. The fixed coppers cause a stem injury which is avoided by the use of glyodin or ferbam. If it is necessary to use arsenate of lead for fruit fly, another type of stem injury (arsenical dry stem) may develop and neither ferbam nor glyodin will prevent this type of injury. Lime should always be used with arsenate of lead to reduce this type of injury as much as possible.

Tests are underway with various antibiotic materials for the control of the bacterial-spot disease of peach and plum. This important disease of stone fruits still remains a difficult problem and a satisfactory control procedure is urgently needed. THE END

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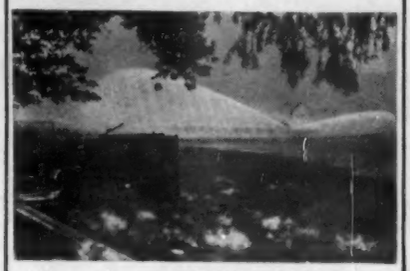

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Mr. Albert J. Livezey of Barnesville, Ohio told the 107th Annual Meeting of the Ohio State Horticultural Society of actual results with his Woods Rotary Cutter. He said, "We have no exact record of time saved but we feel that at least half is saved. While we have had only one season's experience, we feel that a Woods Rotary Cutter for brush disposal in the orchard is one of 'the finds' of our day. We have never, I believe, found anything about which we are so enthusiastic.

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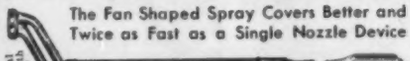

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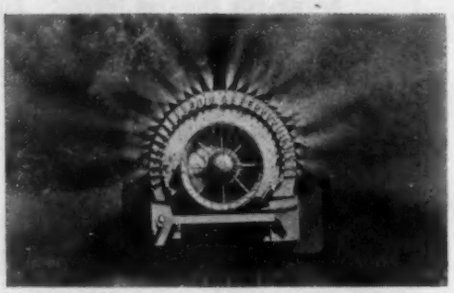

It's called the Hurricane, and with two fans this new Hardie sprayer literally blows insecticides and fungicides on every inch of the highest and densest trees. It has taken years of research and orchard testing to develop a practical two-fan sprayer. Air flow is uniform over the entire radius of the fan housing. The two-fan assembly consists of two axial fans with opposed blades and single shaft. By sucking air from both sides there is no back pressure or vacuum to reduce efficiency. Because of this unique design the fan develops more air at less engine revolutions. This, of course, means greater engine life and more economical operating costs. Get the facts by writing to Cliff Dick, Hardie Mfg. Co., Hudson, Mich.

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- **TWO-FAN SPRAYER**
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Three years ago fruit grower Myron Lord purchased the new Fitchburg chipper now on the market. This machine

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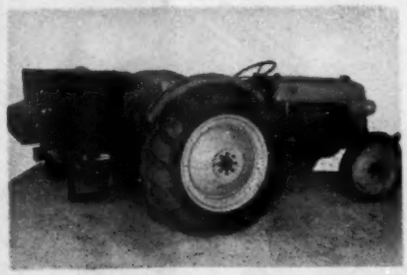

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28" long. Weight 2¼ lb. Perfectly balanced, light and easy to use yet rugged enough to withstand 160 lb. handle pressure. Hickory Handles can be cut to any length. Two sharp blades make clean cuts even in difficult crotches.

PORTER 13S TWO-HAND PRUNER
Two hands are easier than one with this new light pruner. Mrs. will use it round the house and Mr. will use it in the orchard and vineyard. Handles give longer reach for easier cutting and no scratched hands. Cushion comfort grips — no more aching fingers or wrists. Two sharp blades for close clean cuts. Ideal for gift giving.

PORTER PRUNERS ARE BETTER

See them at your dealers. If he can't supply order direct from us. Ask for free Porter Pruner Catalog.

H. K. PORTER, INC. Somerville 43, Mass.

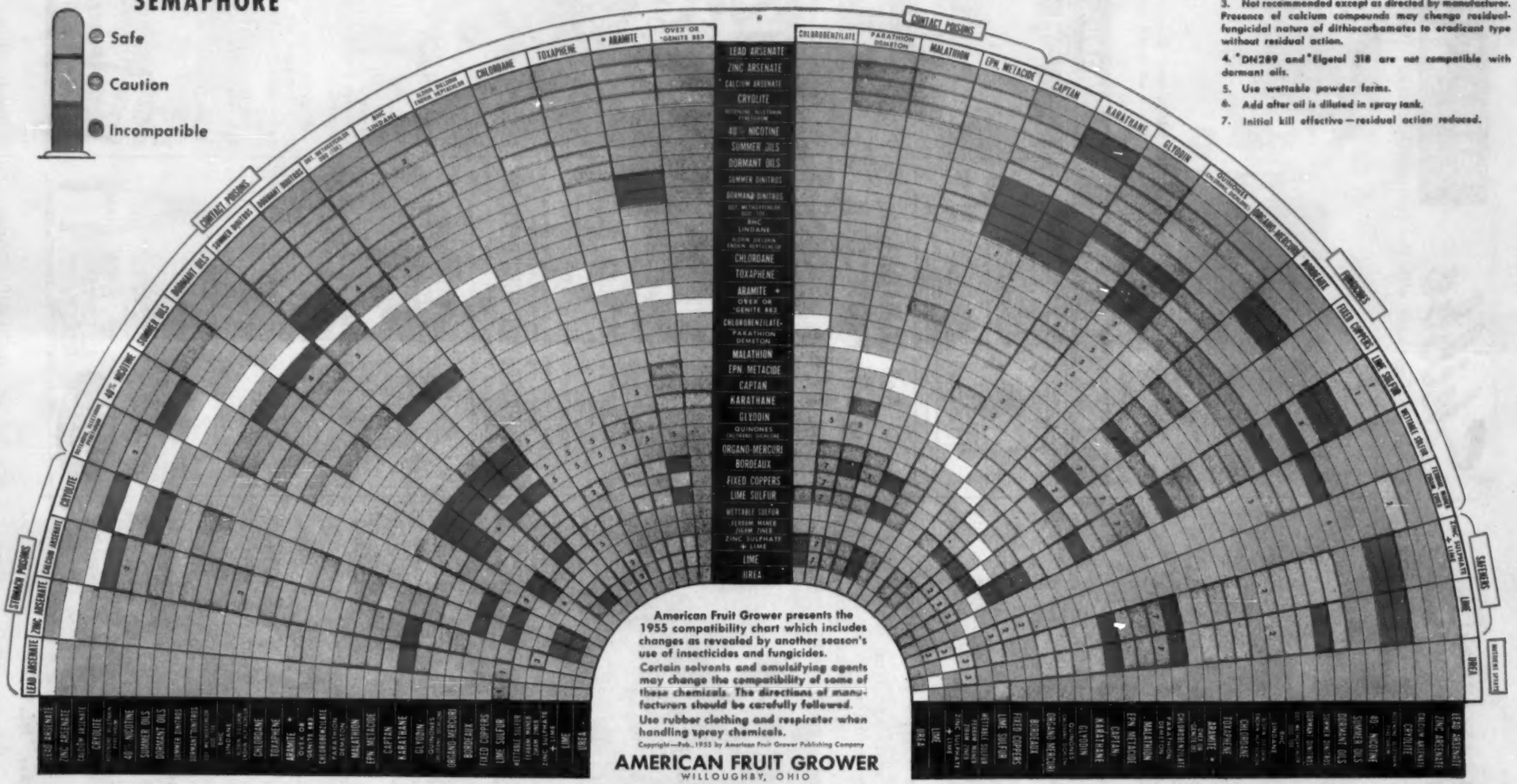
COMPATIBILITY CHART FOR INSECTICIDES AND FUNGICIDES

FOR 1955

The SPRAY CONTROL SEMAPHORE

KEY

1. Decomposes on standing. Best procedure is to add lime sulfur to spray mixture before adding arsenical.
2. When mixed with water, decomposes after standing several hours.
3. Not recommended except as directed by manufacturer. Presence of calcium compounds may change residual-fungicidal nature of dithiocarbamates to eradicant type without residual action.
4. *DN289 and *Elgetol 318 are not compatible with dormant oils.
5. Use wettable powder forms.
6. Add after oil is diluted in spray tank.
7. Initial kill effective—residual action reduced.



American Fruit Grower presents the 1955 compatibility chart which includes changes as revealed by another season's use of insecticides and fungicides.

Certain solvents and emulsifying agents may change the compatibility of some of these chemicals. The directions of manufacturers should be carefully followed.

Use rubber clothing and respirator when handling spray chemicals.

Copyright—Feb., 1955 by American Fruit Grower Publishing Company

AMERICAN FRUIT GROWER
WILLOUGHBY, OHIO

*MANUFACTURERS BRAND NAME

The 1955 Compatibility Chart

THE ninth edition of the AMERICAN FRUIT GROWER Compatibility Chart is shown on the opposite page. First published in 1947, the chart shows what spray chemicals can be mixed together in the tank to avoid separate applications. Forty-nine spray chemicals are listed, more than double the number included on the first chart.

This year two new chemicals are included. Chlorobenzilate will be used as a miticide in some areas, and Karathane shows promise as an effective mildew and mite control. In addition, changes in the compatibility of various chemicals have been made as brought out by another season of experience with spray chemicals.

The key in the upper right hand corner of the chart gives information which is not included in the color combinations on the chart. For instance, DN-289 and Elgetol 318 are not compatible with dormant oils, although other dormant dinitro compounds are. Also, certain combinations, when mixed with water, decompose after standing several hours, and therefore should be used immediately.

Be sure to read the label on the package for complete compatibility instructions. Remember that certain solvents and emulsifying agents may change the compatibility of a spray chemical. Therefore, when mixing chemicals it is safer to use the wettable powder forms.

Or use liquid formulations made by the same manufacturer, and be sure to follow the directions on the label. Mixtures of different types of solvents or emulsifying agents may make the mixture no longer physically suitable for spray application, and pumps and nozzles will not handle the mixture satisfactorily.

The Compatibility Chart lists common or "coined" names of chemicals. For a helpful listing of some of the well known brand names see the chart on this page. We suggest you clip this chart for future reference.

KNOW—DON'T GUESS

AMERICAN FRUIT GROWER'S 1955 Compatibility Chart of Insecticides and Fungicides is available in three colors on heavy Bristol board so it can be posted in office, barn, or spray shed for quick, handy reference.

Send 25 cents—foreign 75 cents—in cash, money order, or stamps for your copy (quantity prices quoted on request) to:

AMERICAN FRUIT GROWER
Willoughby, Ohio

CHECK LIST OF NEWER ORGANIC PESTICIDES WITH SOME COMMONLY KNOWN BRAND NAMES

PESTICIDE AND BRAND NAMES	MANUFACTURER
ALDRIN	
Aldrin	Shell
Black Leaf Aldrin	Black Leaf Products
Chipman Aldrin	Chipman
Niagara Aldrin	Niagara
Orchard Brand Aldrin	General Chemical
Ortho Aldrin	Calif. Spray-Chemical
Penco Aldrin	Pennsylvania Salt
Stauffer Aldrin	Stauffer
ANTIBIOTICS	
Actidione	
Actispray	Niagara
Actispray	Upjohn
Streptomycin	
Agristrep	Merck
Phytomycin	Squibb
Streptomycin-Terramycin	
Agri-mycin	Chas. Pfizer
ARAMITE	
Aramite	U. S. Rubber
Black Leaf Aramite	Black Leaf Products
Chipman Aramite	Chipman
Corona Aramite	Pittsburgh Plate Glass
Geigy Aramite	Geigy
Niagaramite	Niagara
Orchard Brand Aramite	General Chemical
Ortho-Mite	Calif. Spray-Chemical
Penco Aramite	Pennsylvania Salt
Stauffer Aramite	Stauffer
BHC	
Benzahex	Chipman
Benzex	Woolfolk
BHC 10 Spray	Niagara
Black Leaf BHC	Black Leaf Products
Corona BHC	Pittsburgh Plate Glass
Gammacide	Calif. Spray-Chemical
Gamtox	Calif. Spray-Chemical
Gy Ben	Geigy
Hexadow	Dow
Isotox	Calif. Spray-Chemical
Lexone	DuPont
Lintox	Stauffer
Orchard Brand BHC	General Chemical
Penco BHC	Pennsylvania Salt
Penco Hi Gamma BHC	Pennsylvania Salt
Stauffer BHC	Stauffer
CAPTAN	
Orthocide	Calif. Spray-Chemical
Stauffer Captan	Stauffer
CHLORANIL	
Spergon	U. S. Rubber
CHLORDANE	
Black Leaf Chlordane	Black Leaf Products
Chipman Chlordane	Chipman
Chlor Kil	Niagara
Corodane	Pittsburgh Plate Glass
Ortho-Klor	Calif. Spray-Chemical
Pratts Chlordane	B. G. Pratt
Stauffer Chlordane	Stauffer
Synklor	U. S. Rubber
CHLOROBENZILATE	
Chlorobenzilate 25 W	Geigy
DDD (TDE)	
Corona Rothane	Pittsburgh Plate Glass
Niagara DDD	Niagara
Orchard Brand TDE	General Chemical
Orthene	Calif. Spray-Chemical
Rhothane	Rohm & Haas
Stauffer DDD	Stauffer
DDT	
Black Leaf DDT	Black Leaf Products
Chipman DDT	Chipman
Corona 50-50 W	Pittsburgh Plate Glass
DDTOL	Sherwin-Williams
D-50 Wettable	Rohm & Haas
Deenate	DuPont
Dow DDT	Dow
Geigy DDT	Geigy
Genitol	General Chemical
Genitox	General Chemical
Niatox	Niagara
Penco DDT	Pennsylvania Salt
Penco Pentech	Pennsylvania Salt
Persisto	Calif. Spray-Chemical
Pratts DDT	B. G. Pratt
Santobane	Monsanto
DEMETON	
Stauffer Systox	Stauffer
Systox	Chemagro
Systox	Dow
DIAZINON	
Diazinon 25 W	Geigy
Diazinon 25 E	Geigy
Diazinon Fly Bait	Geigy
DICHLONE	
Black Leaf Phygon	Black Leaf Products
Kolo 100	Niagara
Phygon	U. S. Rubber
Stauffer Phygon	Stauffer
DIELDRIN	
Black Leaf Dieldrin	Black Leaf Products
Chipman Dieldrin	Chipman
Corona Dieldrin	Pittsburgh Plate Glass
Dieldrin	Shell
Orchard Brand Dieldrin	General Chemical
Ortho Dieldrin	Calif. Spray-Chemical
Penco Dieldrin	Pennsylvania Salt
Stauffer Dieldrin	Stauffer
DINITROS-DORMANT	
Corodinoc	Pittsburgh Plate Glass
Corona Dinitro Powder	Pittsburgh Plate Glass
Dinitro Dry	Niagara
DN Drymix No. 1	Dow
DN Drymix No. 2	Dow
DN-289	Dow
Elgetol 30	Standard Agri. Chem.
Elgetol 318	Standard Agri. Chem.
Krenite 26	DuPont
Nitro Vaporol	Calif. Spray-Chemical
DINITROS-SUMMER	
DN-111	Dow
ENDRIN	
Black Leaf Endrin	Black Leaf Products
Chipman Endrin	Chipman
Endrin	Shell
Endrin	Velsicol
Penco Endrin	Pennsylvania Salt
Stauffer Endrin	Stauffer
EPN	
EPN 300	DuPont
FERBAM	
Black Leaf Ferbam	Black Leaf Products
Carbamate	Niagara
Chipman Ferbam	Chipman
Coromate	Pittsburgh Plate Glass
Fermate	DuPont
Ferradow	Dow
Karbam Black	Sherwin-Williams
Nu-Leaf	Calif. Spray-Chemical
Orchard Brand Ferbam	General Chemical
Penco Ferbam	Pennsylvania Salt
GENITE 883	
Genite 883	General Chemical
GLYODIN	
Crag Fruit Fungicide 341	Carbide & Carbon
HEPTACHLOR	
Black Leaf Heptachlor	Black Leaf Products
Chipman Heptachlor	Chipman
Geigy Heptachlor	Geigy
Heptachlor	Velsicol
Ortho Heptachlor	Calif. Spray-Chemical
Stauffer Heptachlor	Stauffer
KARATHANE	
Karathane	Rohm & Haas
Mildex	Larvacide Products
LINDANE	
Black Leaf Lindane	Black Leaf Products
Chipman Lindane	Chipman
Dow Lindane	Dow
Geigy Lindane	Geigy
Isotox	Calif. Spray-Chemical
Niagara Lindane	Niagara
Orchard Brand Lindane	General Chemical
Penco Hi Gam	Pennsylvania Salt
Penco Lindane	Pennsylvania Salt
Pratts Lindane Spray	B. G. Pratt
Stauffer Lindane	Stauffer
MALATHION	
Black Leaf Malathion	Black Leaf Products
Chipman Malathion	Chipman
Corona Malathion	Pittsburgh Plate Glass
Geigy Malathion	Geigy
Malathion	American Cyanamid
Malathion 50 Spray	Niagara
Orchard Brand Malathion	General Chemical
Ortho Malathion	Calif. Spray-Chemical
Penco Malathion	Pennsylvania Salt
Pratts Malathion Spray	B. G. Pratt
Stauffer Malathion	Stauffer
MANEB	
Dithane M-22	Rohm & Haas
Manzate	DuPont

(*Continued on page* 59)

KEN SPRAY GUNS

Ken Spray guns are sturdy—well built and economical. They are adjusted, by a simple twist of the handle, from long driving straight stream to a soft wide cone shaped spray pattern.

KEN M-2 Double Gun
Wt. 4 lbs.
KEN M-21 Large Single Gun
Wt. 2¾ lbs.
KEN M-41 Single Gun (Jr. Size)
Wt. 1¼ lbs.
KEN M-61 Single Gun (Jr. Size)
Wt. 1½ lbs.
KEN ML-7 Machine Mounted Single Gun Locking Type
Wt. 3¾ lbs.
KEN M-6 Machine Mounted Double Gun
Wt. 4 lbs.
KEN M-9 Rod Cut-Off Valve

Ken guns, without exception, shut-off at the head with metal to metal contact to provide long trouble free life. The cap and discs can be removed while the line pressure is on the gun. Write for descriptive literature on these and other KEN GUNS.

KEN STANDARD CORP.
1401 N. Fares Ave.
EVANSVILLE 11, IND.

NEOCHEM
DEER REPELLENT

The ODOR type repellent containing Bone Tar Oil.

1 gallon tins	$3.95
5 gallon cans	3.50 gal.
50 gallon drum	3.25 gal.

F.O.B. Neosho, Missouri. Freight allowed on shipments of 24 gallons or more.

Dealer inquiries acknowledged.

Neochem Products Co., Inc.
Neosho, Missouri
Box 127

BLACK RASPBERRY PLANTS
Certified, disease free, Raspberry plants. Cumberland, Morrison and Bristol plants available at wholesale and retail prices. Contact the **Owen Potato Farm**, Newark, Ohio.

If you spray insecticides containing
ALDRIN, DIELDRIN,
E.P.N., or PARATHION
You need a
CESCO
Saf-Air RESPIRATOR

Approved by U.S. Dept. of Agriculture for use in non-enclosed areas

Here is a twin cartridge respirator that fits perfectly, and comfortably, without excessive tightening of adjustable dual headbands. It stays put for hours and purifies the air you breathe. Replacement filters installed quick and easy.

Don't take a chance on poisoning from insecticides. Protect yourself and your workers. Order the **CESCO Saf-Airs** you need today at $5.75 each or three for $15.95. We pay postage.

$5.75 OR 3 for $15.95

Send check or money order to

CHICAGO EYE SHIELD COMPANY
2300 West Warren Boulevard - Chicago 12, Illinois

INSECT CONTROL

(*Continued from page* 48)

of worms, and eliminate one or two of the late applications.

No detailed schedules can be given here, but state experiment stations and extension services are fully aware of the situation and are prepared to advise of any modification of spray schedules that may be needed.

New insecticides for fruit insect control are still appearing, although in smaller numbers than in the late 1940's. More rigid labeling requirements have slowed up the introduction of new materials, and requirements under the recently enacted Miller "Pesticide Residue Amendment" will have a further deterring influence.

With all of the new procedures required, the development and introduction of a new insecticide is a major and costly undertaking. Although new insecticides may not appear at the furious rate experienced during the past decade, progress will be on a much more solid base. By the time a new insecticide first reaches commercial usage, there will be more nearly complete information about it. In addition to thorough testing for insect control, it will have been studied carefully from the standpoint of spray residue, possible hazard to the operator, and effects on trees. Fewer partially developed insecticides will reach the grower, which is all to the good. THE END

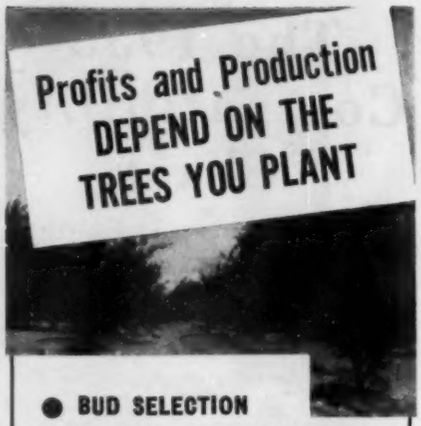
ORCHARD MITES

(*Continued from page* 19)

prevent early fruit drop.

Growers have a long list of chemicals from which to choose for mite control. Oil can be used to destroy winter eggs of the European red mite and clover mite. A number of effective phosphorus materials are also available. These include TEPP, parathion, EPN, and malathion. These phosphates may have increasingly less value in the years ahead because of the demonstrated ability of mites to develop resistance to them. Ovotran has given good results when included in three to four post-bloom cover sprays at low dosages.

Other good mite killers include Aramite (not too dependable in the Northeast on European red mite), chlorobenzilate, sulphenone, and Dimite. The fungicide, glyodin, also has fair miticidal action. Authorization has now been granted for the use of the systemic pesticide, demeton (Systox) and a single mid-summer application may give good control of both mites and aphids. THE END



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- **TRUE-TO-NAME VARIETIES**
- **PROVED and PROFITABLE**

The Greening Nursery Company, one of the leaders in bud selection, have for over 100 years given all growers the benefit of their research and improved strains which mean greater orchard profits.

AGENTS
Earn extra money, full or part time. It's pleasant and profitable to sell Greening nursery stock. Write us today for all of the details.

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TREES YOU CAN TRUST
MONROE MICHIGAN

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P. O. Box 805, Monroe, Michigan

the MIAMI BEACH
BLACKSTONE
"The Garden Hotel"
An acre of gardens

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CONGENIAL
SPACIOUS
LUXURIOUS

Air Cooled Rooms Available
Housekeeping Suites
Coffee Shop
Daylong Children's Activities
Huge Swimming Pool

FREE Refrigerators
Moonlight Swimming
and Wienie Roasts
Ample Parking
Pick up to and from terminal

OWNER-MANAGED BY ALFRED STONE
Write for Brochure

BRAND NAMES

(*Continued from page 57*)

PESTICIDE AND BRAND NAMES	MANUFACTURER
METACIDE	
Metacide	Chemagro
METHOXYCHLOR	
Chipman Methoxychlor	Chipman
Geigy Methoxychlor	Geigy
Marlate	DuPont
Methoxcide	Niagara
Orchard Brand Methoxychlor	General Chemical
Orthotox	Calif. Spray-Chemical
Stauffer Methoxychlor	Stauffer
NABAM	
Dithane D-14	Rohm & Haas
Liquid Parzate	DuPont
Ortho Nabam	Calif. Spray-Chemical
Thiodow	Dow
ORGANO-MERCURY	
Coromerc	Pittsburgh Plate Glass
Puratized Agricultural Spray	Gallowhur
Puratized Apple Spray	Gallowhur
Stauffer Phenyl Mercury Lactate	Stauffer
Tag	Calif. Spray-Chemical
OVEX	
Orthotran	Calif. Spray-Chemical
Ovotran	Dow
Stauffer Ovex	Stauffer
PARATHION	
Black Leaf Parathion	Black Leaf Products
Chipman Parathion	Chipman
Corothion	Pittsburgh Plate Glass
Dow Parathion	Dow
Geigy Parathion	Geigy
Genithion	General Chemical
Niran	Monsanto
Orthophos	Calif. Spray-Chemical
Panthion	Woolfolk
Paradust	Stauffer
Penco Parathion	Pennsylvania Salt
Phos Kil	Niagara
Stauffer Parathion	Stauffer
Vapophos	Calif. Spray-Chemical
QUARTERNARY AMMONIUM COMPOUNDS	
Purasan AD 50	Gallowhur
Stanofide	Standard Oil of Ind.
QUINONES	
Black Leaf Phygon	Black Leaf Products
Kolo 100	Niagara
Phygon	U. S. Rubber
Spergon	U. S. Rubber
Stauffer Phygon	Stauffer
TEPP	
Black Leaf TEPP 40	Virginia-Carolina
Mulsifos	Woolfolk
Niagara TEPP	Niagara
Orchard Brand TEPP	General Chemical
Pyfos	Woolfolk
Stauffer TEPP	Stauffer
Vapotone	Calif. Spray-Chemical
TOXAPHENE	
Alltox	Calif. Spray-Chemical
Black Leaf Toxaphene	Black Leaf Products
Chipman Toxaphene	Chipman
Geniphene	General Chemical
Gy-Phene	Geigy
Penco Toxaphene	Pennsylvania Salt
Stauffer Toxaphene	Stauffer
Toxakil	Niagara
UREA	
NuGreen	DuPont
ZINEB	
Dithane Z-78	Rohm & Haas
Ortho Zineb	Calif. Spray-Chemical
Parzate	DuPont
Stauffer Zineb	Stauffer
Thiodow	Dow
ZIRAM	
Corozate	Pittsburgh Plate Glass
Karbam White	Sherwin-Williams
Opalate	Calif. Spray-Chemical
Orchard Brand Ziram	General Chemical
Stauffer Ziram	Stauffer
Z-C Spray	Niagara
Zerlate	DuPont

Du Pont Marlate®

Methoxychlor Insecticide

gives top control of curculio on apples

plus...

. . . *Fine Fruit Finish*

In addition to its excellent control of curculio, "Marlate" methoxychlor contributes to fine finish. It doesn't cause russeting, even on sensitive varieties. It's compatible with commonly used fungicides.

Kills Other Insects

With "Marlate" you'll control codling moth and fruit tree leaf roller if they are present with curculio. In later sprays, "Marlate" stops sawfly and apple maggot . . ."Marlate" is ideal for this close-to-harvest use because it doesn't present a residue problem.

ON CHERRIES, "Marlate" is the answer to cherry fruit fly maggot and curculio. You can use it safely for maggot control up to seven days from harvest . . . because it leaves minimum residues of low toxicity on fruit. "Marlate" won't cause dry stem of Morello . . . and preliminary tests show "Marlate" has no adverse effect on growth of Montmorency.

On all chemicals always follow directions for application. Where warning or caution statements on the use of the product are given, read them carefully.

See your dealer today for

DU PONT REG. U. S. PAT. OFF.

Marlate® 50

Methoxychlor Insecticide

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

OPPORTUNITY ADS

Only 25c a word for one-time insertion; 20c a word for two-time insertion; 15c a word for four-time insertion—CASH WITH ORDER. Count each initial and whole number as one word. Address AMERICAN FRUIT GROWER, Willoughby, Ohio.

AGENTS WANTED

RUN A SPARE-TIME GREETING CARD and Gift Shop at home. Show friends samples of our new 1955 All-Occasion Greeting Cards and Gifts. Take their orders and earn up to 100% profit. No experience necessary. Costs nothing to try. Write today for samples on approval. REGAL GREETINGS, Dept. 58, Ferndale, Michigan.

BANTAMS

DARK CORNISH BANTAMS—BEAUTIFUL Midgets, Super Meat Breed. Like eating Quail. Hatching Eggs. Stock. Illustrated Circular. WILL SCHADT, Goshen, Indiana.

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BEES INCREASE SEED AND FRUIT yields, require little attention. Big Profits. Stingproof equipment. Factory prices save 25%. Free advice from experienced bee men. Free catalogue. WALTER T. KELLEY CO., Dept. F, Clarkson, Kentucky.

BUSINESS OPPORTUNITIES

SHINE CARS WITHOUT "POLISH." NEW invention. Lightning seller. Cars gleam like mirror. Samples sent on trial. KRISTEE 109, Akron, Ohio.

GROW MUSHROOMS. CELLAR, SHED. Spare, full time, year round. We pay $3.50 lb. We paid Babbitt $4,165.00 in few weeks. FREE BOOK. WASHINGTON MUSHROOM IND., Dept. 127, 2954 Admiral Way, Seattle, Wash.

CIDER PRESSES

CIDER PRESSES AND ACCESSORIES. Supplies and repairs. W. G. RUNKLES' MACHINERY CO., 185 Oakland St., Trenton, N. J.

FOR LEASE—ORCHARD

APPLE ORCHARD FOR LEASE. 100 ACRE farm, 60 acres good producing, best variety apples, completely equipped, situated in Athens, Michigan, Modern housing, near schools., For details contact MRS. HARTMAN ZINN, Athens, Michigan.

FOR SALE—EQUIPMENT AND SUPPLIES

WE HAVE A FINE SELECTION OF Rebuilt and guaranteed Speedsprayers, Speedaires, and Bean high-pressure sprayers with 35-gallon pumps, attractively priced. MILLBURG GROWERS EXCHANGE, Benton Harbor, Michigan, southwestern Michigan's oldest and largest Bean dealer.

GARDEN TRACTORS $100.00, 3-H.P. McLEAN TRACTORS, 324 West Tenth, Indianapolis, Indiana.

GOOD USED FARM CONTAINERS—SPLINT handle baskets, bushels, boxes, hampers, bags, nailed and wirebound crates. Truckload or carlots. Call or write ZELVY BROS. CONTAINER CO., 2005 Orange Ave., Cleveland, Ohio.

1—1953 BEAN SPEED SPRAYER. BARGAIN. 1—1947 Bean Speed Sprayer. Good condition at $1,000.00. 1—Model 48 Bean Sprayer. Demonstrator. 1—35T Bean Sprayer. 1—No. 55 Bean Royal Pump. Demonstrator. 1—No. 35 Bean Royal Pump. Good condition. 3—PTO Sprayers. CORY ORCHARDS, Cory, Indiana.

BUY SURPLUS FARM TOOLS, MACHINery, tractor, truck from Government. List $1.00. BOX 213AM, East Hartford 8, Conn.

LAWRENCE MIST-O-MATIC SPRAYER, Excellent condition, latest model with all improvements, excellent quality fruit at 8X concentration, bargain price; also used Hardie Spray Boom. CASTOR FRUIT FARMS, North Rose, N. Y.

SPRAY RIGS—500 GALLON "FRIEND" AIRblast. 400 gallon Farquhar with spray mast. Both excellent condition. JOHN K. HALL, Ruhlman Rd., Lockport, N. Y.

NEW AND SLIGHTLY USED PORTABLE sprinkler irrigation systems. Also dealer franchises available in Wisconsin. ERIC FRANKE, Route 5, Sturgeon Bay, Wisconsin.

FOR SALE—REAL ESTATE

30 ACRE ORCHARD, MOSTLY McINTOSH, on Lake Champlain, 10 miles from Burlington. Fully equipped: sprayer, tractor, packing house, sizing machine, conveyors, etc. 10,000 to 12,000 bushel annual production. Write ALBERT THOMPSON, Shelburne, Vermont.

FRUIT FARM: 107 ACRES OF HIGH AND rolling land with 60 acres in a bearing peach orchard. The balance of the land is good farm land and pasture with spring water in it. Large bank barn and straw shed. Water from an ever flowing spring runs in the straw shed. Spring water is pumped into a large 6 room 2 story house with bath and a new coal furnace. A 3-room cottage with bath and oil heat for help. Large garage and work shop. Buildings are under slate roof. Here is a money maker. Located a few miles south of Salem, Ohio and on an improved road. For more information write to JOHN W. ROTZEL, a realtor, 185 West LaClede Ave., Youngstown 7, Ohio.

HAVE AN EXCELLENT OPPORTUNITY for a young, married, ambitious fruit grower. I am offering for sale part of my orchard consisting of approximately 650 Stayman, 225 Grimes, 300 Jonathan and 250 Rome trees. Can offer assistance in use of our spraying and orchard equipment. Also will help arrange long term financing for proper party. Phone or write LEE C. WEINGART, 1206 First National Tower Bldg., Akron, Ohio. Phone JE 5-7131.

RETIREMENT HOMES, EASY PAYMENTS, nothing down; gardens, chickens, fishing. List free. PERY, Brierhill, Pa.

HELP WANTED—MALE

A LARGE WELL EQUIPPED APPALACHIAN orchard is looking for a young man with an agricultural background and with the qualifications to rapidly take charge of all production from pruning to storage. Also qualified to fill any orchard capacity on occasion. Give experience, age, references, size family, education, health status, and all possible information. Write BOX 143, AMERICAN FRUIT GROWER.

HORSE TRAINING

"HOW TO BREAK AND TRAIN HORSES"—A book every farmer and horseman should have. It is free; no obligation. Simple address BEERY SCHOOL OF HORSEMANSHIP, Dept. 1382, Pleasant Hill, Ohio.

INCUBATORS

INCUBATORS — ALL SIZES. ELECTRIC. Hatch Goose, Guinea, Turkey, Duck, Chicken Eggs. Special Instructions. Circular. GOSHEN POULTRY FARM, Goshen, Indiana.

MISCELLANEOUS

FLOWER BULBS. CHOICE COMMERCIAL flower bulbs for commercial flower growing or resale. Descriptive lists and information free. Write for current list now. REGAL BULB CO., Holland, Mich.

BERRY BOOK: "THIRTY YEARS OF BERries". Raspberries and Strawberries. 84 pages, price $1.00 P'paid. ROY TURNER, 315 Livingston St., Peoria, Ill.

WINES: MAKE YOUR OWN FROM GRAPES, raisins, berries. No special equipment needed. Printed directions, 25¢ coin. TIMBERLAKE ENTERPRISE, Box 1401, Denver 1, Colorado.

NATIONALLY ADVERTISED REBUILT Vacuum Cleaners! $39.95 FOB Youngstown, Ohio. World famous models with a complete set of attachments: 1. Rug Nozzle, 2. Floor Brush, 3. Upholstery Tool, 4. Crevice Tool, 5. Dusting Brush. Including completely rebuilt motor with new parts. Also hose, dust bag, filter, 20' cord. Satisfaction guaranteed or your money back. Order yours today. Write BOX 141, AMERICAN FRUIT GROWER, Willoughby, Ohio.

PINKING SHEARS

ONLY $1.95 POSTPAID. CHROMIUM plated, precision made. Manufacturer's Christmas overstock. Guaranteed $7.95 value or money refunded. Order by mail. LINCOLN SURPLUS SALES, 1704 W. Farwell Ave., Chicago 26, Illinois.

POSITION WANTED

POSITION WANTED IN FRUIT INDUSTRY starting in June. Full or part time. Age 65. Write BOX 142, AMERICAN FRUIT GROWER.

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NATIONAL TRADE MARK COMPANY, Munsey Building, Washington 4, D. C.

WANTED TO BUY

WANTED: 500 GALLON SUPPLY TANK and pump. Prefer Bean. MERRITT HART, 589 Dutchess Tpke., Poughkeepsie, N. Y.

CHIPPER FOR FARMALL M-TRACTOR. Must be cheap. LEONARD HAAS, So. Milwaukee, Wis., Route 1.

WANTED: GOOD USED SMALL HYDRAUlic power cider press. EARL ROHRER, Osawatomie, Kansas.

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NOW there is a new modern Non-Surgical treatment that permanently corrects rupture. These Non-Surgical treatments are so certain, that a Lifetime Certificate of Assurance is given. Write today for our New FREE Book that gives facts that may save you painful and expensive surgery, and tells how non-surgically you may again work, live, play and love and enjoy life in the manner you desire. There is no obligation.
Excelsior Hernia Clinic Dept. F-905, Excelsior Springs, Mo.

Advertisement

From where I sit ... *by* Joe Marsh

Buz "Badgers" 'Em into Coming

Attendance at Rotary Club meetings was a real problem — until Buz Walker, the new president, took over. Buz managed to get 100% turnout last night.

"No matter how good an organization is," Buz says, "you can't do a real job unless you get everybody working together and coming to meetings."

"I wanted to be sure all the boys made the first Fall meeting, so I sent each one a badge marked 'Reception Committee.' Yes, they all showed up — I have a hunch they'll keep coming back, too."

From where I sit, if you want to get along with people it never hurts to make them feel a little bit important. Of course, to be really *neighborly* you've got to go a step further and show true respect for the other fellow's rights—his right to vote... his right to work... his right to enjoy a glass of beer if and when he chooses. Do that and you'll get a good "reception" wherever you go.

Joe Marsh

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FRUIT TREES, STRAWBERRY, RASPBERRY AND BLUEBERRY PLANTS

Nut and Shade Trees, Grape Vines, Flowering Shrubs, Evergreens, Dwarf Apple Trees (on mailing 9 and 7 stock). Over 80 years growing and distribution service to planters guarantees satisfaction. Our FREE 60-page catalog illustrates, describes complete nursery line at reasonable prices. Write today.

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Hardy Northern Grown Plants
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EARLY SPRING DELIVERY
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Allen's 1955 Berry Book tells best varieties for home and market, and how to grow them. *Free copy. Write today.*

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PEACH APPLE TREES LOW AS **20c**

Cherries, Pears, Plums, Nut trees, Strawberries, Blueberries, etc. Grapes 10c, Shrubs, Evergreens, Shade Trees, Roses 25c up. Quality stock can't be sold lower. Write for **FREE** color catalog and $3.00 **FREE** bonus information.

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If Ruptured Try This Out

Modern Protection Provides Great Comfort and Holding Security

Without Torturous Truss Wearing

An "eye-opening" revelation in sensible and comfortable reducible rupture protection may be yours for the asking, without cost or obligation. Simply send name and address to William S. Rice, Inc., Dept. 84-D Adams, N. Y., and full details of the new and different Rice Method will be sent you Free. Without hard flesh-gouging pads or tormenting pressure, here's a Support that has brought joy and comfort to thousands—by releasing them from Trusses with springs and straps that bind and cut. Designed to securely hold a rupture up and in where it belongs and yet give freedom of body and genuine comfort. For full information—write today!

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C & O Better Varieties are all grower-approved and are the foundation of many of America's finest orchards.

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Catalog of full selection: fruit, ornamental, shade trees, and shrubs—ask for it!

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Better Fruit Trees for 40 Years!

Leading varieties of **APPLE, PEACH, CHERRY, PLUM, GRAPE.** Guaranteed hardy, disease resistant. **Free Catalog.** 48 pages of money-saving offers, fruits, roses, shade trees, ornamentals, etc.—shown in natural color. Write today.

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DWARF FRUIT TREES

Ideal for home gardens, require little space, full size fruit, bear early, 2nd or 3rd year. DWARF PEACH, APPLE, PEAR; New North Star Dwarf CHERRY. Also new grapes, nut trees, berries. Guaranteed stock. Catalog free.

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Ideal under irrigation. No trouble with runners. High yielding. Easy to pick. Large uniform size. Excellent flavor. Circular on request.

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Pine, Fir, Spruce, Canadian Hemlock, Arborvitaes, in variety. For growing Christmas trees, Ornamental landscape, Hedges, Windbreaks, Forestry. Quality stock low as 2c each on quantity orders. Write for price list.
SUNCREST EVERGREEN NURSERIES, Dept. AFG, Box 305, Homer City, Pa.

STRAWBERRY PLANTS

ESTEEM—sensational new all-summer bearing strawberry. Vigorous, high yielding, etc.
SHARON—most beautiful of the June bearers. Excellent flavor, high yielder, good shipper, etc. Write for descriptive price list.
FIELDHOUSE FRUIT FARM, Dodgeville, Wisconsin

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PEACHES
PEARS
PLUMS
PRUNES
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• NOW we issue a New York State Dept. of Agriculture certificate which guarantees our cherry trees to be virus-free. Supplies of fruit trees are limited. It will pay you to order early this season. Our fruit trees . . . APPLES, PEARS, CHERRIES, PLUMS, PEACHES . . . are sturdy, northern-grown stock. Write for FREE CATALOG today.

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BULBS. ROSES .. VINES
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American Fruit Grower

RICHARD T. MEISTER, *Editor*
H. B. TURKEY, *Associate Editor*

• *Fruit for Health* •

The Spirit of Liberty Hyde Bailey

ON Christmas night of 1954, in his home at Ithaca, N. Y., Liberty Hyde Bailey passed away at the age of 96.

A great man has gone from among us, but the shafts of light from his glorious life never shone more brightly nor cast themselves further. The grief of his immediate family and of the thousands who knew him and knew of him is no less, but the blessed memories of a great spirit and of a great heart prevail.

Much has been said of the more than 100 books which he wrote and edited. Of his *Cyclopedia of Horticulture*. Of his 300,000 plant specimens at the Bailey Hortorium at Ithaca. Of his travels to every corner of the earth. Of his recognition as the world's authority on palms and on horticultural plants. Of his inspirational leadership in horticulture and in agriculture. Of his record as a scientist and as a teacher. Of his ability to translate the profound things of life into everyday understanding. Of his boyhood at South Haven, Mich. Of his services to Cornell University and the great state of New York. Of the honors literally heaped upon him by an appreciative world. And of the humility and devotion to purpose which were his constant companions throughout.

To the end, Liberty Bailey lived for the future. At the age of 90 he proclaimed the launching of his great life work, which would take 10 years to complete—*The Palms of the World*. He spoke ever of the "the quest" and of "the future." It is the magnificent living spirit of a great man which stands out above all else and which shall never die. Already his shield takes on the luster of newly burnished metal.

Only a very few years ago he walked unannounced into the horticultural building at Michigan State College and placed his hand reverently on the large black walnut double desk that was his when he established the first Department of Horticulture in the country, and said affectionately, "This is the old desk." It is from that desk that these words are written.

Liberty Hyde Bailey lies peacefully at rest, but his great spirit marches on.

You Can Fool the Consumer—but Not for long!

A MIDWESTERN subscriber writes us as follows:

"I would like to see article after article in AMERICAN FRUIT GROWER on putting up an honest pack of apples for fresh market, for processing, and even for juice. Many growers 'put it over' and then gloat over the fact. If you will make a survey of f.o.b. buyers and delivered market buyers, you will learn all about the evils of fake packs in apples. You can do the apple industry the most good if you will keep hammering at these fake packs regularly in every issue. It will be a great help to the growers, too. All the articles on cultural subjects that may be published will not mean a thing until we get some real packs of apples."

With the development of the new materials and methods of application which make possible far better control of insects and diseases, growers should secure a higher percentage of perfect fruit than ever before. The money invested in these new materials and equipment will be money wasted unless we give the consumer the honest pack that he is paying for.

Fruit Talk

Denmark and **Italy** both pronounce the **Redhaven peach** to their liking and likely to become a leading commercial sort there.

The **British** are showing that fruit wrappers which are impregnated with **iodine** or its compounds are very helpful in **preserving grapes, apples, and pears.**

Fred Emmert of **Connecticut** points out the interesting paradox that although a fruit tree is enclosed in an envelope of nitrogen (air is 80 per cent nitrogen gas), yet this element is most frequently in short supply to the tree, due, of course, to the fact that free nitrogen is not available to the plant.

Red raspberry plants may be increased **a hundredfold** after one year's growth by employing root cuttings, according to **J. P. Hudson** of **England.** The method is useful for new varieties where rapid multiplication is desired.

Says **Dave Perrine,** prominent **Illinois** fruit grower, "Always leave a check when you are carrying on practices which are a little uncertain. Otherwise you will never know whether the results were due to what you did or to some unknown factor."

Never **irrigate** too little and too late, get ready for irrigation during a wet spell, and try to think of rainfall as supplemental, says **Lloyd Yarbrough** of **Arkansas.**

Fred Vollenweider of **Missouri** makes the grinning comment that when he was drilling for water he was "scared to death he might strike oil!"

According to **Dr. D. H. Scott** of the USDA, total **strawberry** production in the **United States** is 11,531,000 crates, of which the West Coast produces 7,140,000. Fifty-one per cent of the entire strawberry crop is now processed, and 80 per cent of the processed crop comes from the West Coast.

Any doubt that **apple fruits in storage** are not living is dispelled by some interesting work from **Canada** which shows that the McIntosh apple in storage has the capacity to utilize the carbon from carbon dioxide in the atmosphere and incorporate it in the formation of amino acids and proteins in the fruit during storage.

Massachusetts workers report that **canned fruit,** as well as fresh fruit, benefits from refrigeration (32° F.).

Said **Jack Z. Anderson,** president of the **California Canning Pear Association** at a Pacific Coast meeting, "We have learned through years of trial and error that co-operative effort yields more satisfactory returns to a greater number of people than rugged individualism and short-sighted selfishness brings to the smaller number."

—*H. B. T.*

Coming Next Month

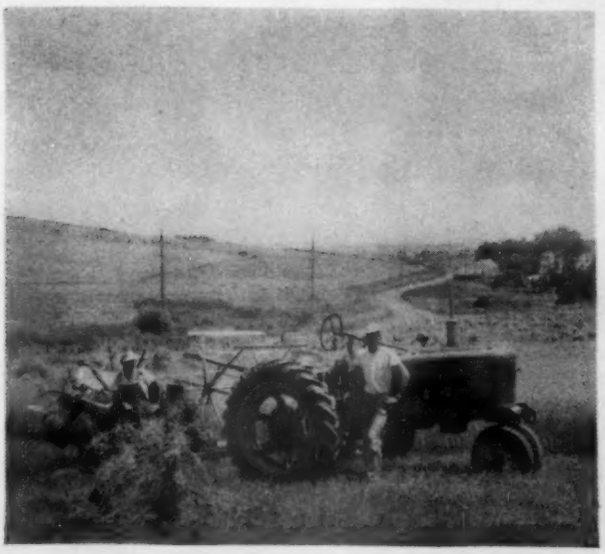
- The New Peach Varieties—and Where to Plant Them
- Indiana Grower Propagates Dwarf Apples
- The Little Garden Tractor Is a Big Help
- Give Your Trees a Good Start

B.F.Goodrich
Power-Grip tractor tires

"HOLD BETTER IN ALL TYPES OF SOIL"

Arley Christiansen uses 4 tractors, 6 trucks and 2 cars in running his 6,130-acre farm near Levant, Kansas. The tractors are used for such jobs as hauling disc plows, rod weeders (shown at right with Christiansen) and grain drills. "By golly, I like 'em," Christiansen says about B. F. Goodrich Power-Grip tractor tires, adding that there is "practically no slippage and they wear longer."

Power-Grip cleats are longer and higher; have a bigger face area to press against the soil. They take a bigger bite, grip the soil for full traction in reverse or forward. Power-Grip shoulders are square cut to defy slippage. Power-Grip tires work faster, save fuel.



"Boy, I sure love 'em"— That's what Hans Tennigkeit (above, left, with son, Don) says about B. F. Goodrich Power-Grip tractor tires. He likes the greater traction Power-Grip tires give on his hilly, 126-acre farm near Persia, Iowa. No other tire is wider than Power-Grip. Time after time you'll find that in the same size, no other tire has more cleats. Power-Grip is bigger all around—bigger cleats and bigger shoulders—to do a better job for you.

Low-cost Super Hi-Cleat wears longer— Albert Peterson of Irvington, Nebraska, (above) has used Super Hi-Cleat tractor tires for 3 years, reports they are hardly worn. If you want a low-cost, longer-wearing tractor tire, choose the B. F. Goodrich Super Hi-Cleat. See your B. F. Goodrich retailer. His address is listed under Tires in the Yellow Pages of your phone book. Or write *The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.*

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

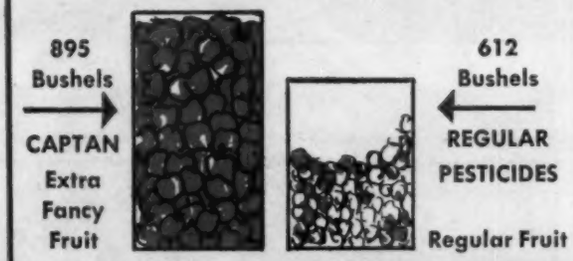
CAPTAN 50-W buys MORE spray protection per DOLLAR!

How do you evaluate your spray protection costs?

Studies that claim to show the relative cost of spray materials are often misleading. Overlooked is the true test of a spray's effectiveness – the *market value* of the crop, which includes the bonus for extra-fine quality as well as quantity yield. You, the grower, know the value of a prime quality crop in a competitive market.

CAPTAN offers the highest return on spray investment in terms of crop value. Results of past seasons have established CAPTAN as an amazingly effective fungicide for a great variety of fruits, completely satisfying growers in application, safety, and low toxicity, as well as crop yield and quality.

Fruit Yield in Bushels per Acre



237 Bushels More Apples per Acre with Captan!

The above results recently published in leading fruit magazines show that a Captan spray program produced 237 bushels more apples than a regular spray program. This published data is just part of a widespread acceptance of the Captan formula for increased profits. *Write for descriptive literature to Stauffer Chemical Company, 380 Madison Ave., New York 17. Offices in principal cities.*

CAPTAN is safe, compatible and effective in controlling the following diseases of fruits:

- APPLES—Scab, Brooks Fruit Spot, Sooty Blotch, Fly Speck, Bitter Rot
- PEACHES—Brown Rot, Scab
- CHERRY—Leaf Spot, Brown Rot
- STRAWBERRY—Botrytis Fruit Rot, Leaf Spot
- AVOCADO AND MANGO—Cercospora Spot or Blotch

Stauffer CHEMICALS SINCE 1885

"STAUFFER-since 1885 a trusted brand name!"